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► JANUARY 1987 VOL. 7 NO. 1

BRITAIN'S BIGGEST-SELLING HOME COMPUTER MAGAZINE



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THE CLASS OF '86 – THE YOUR COMPUTER AWARDS

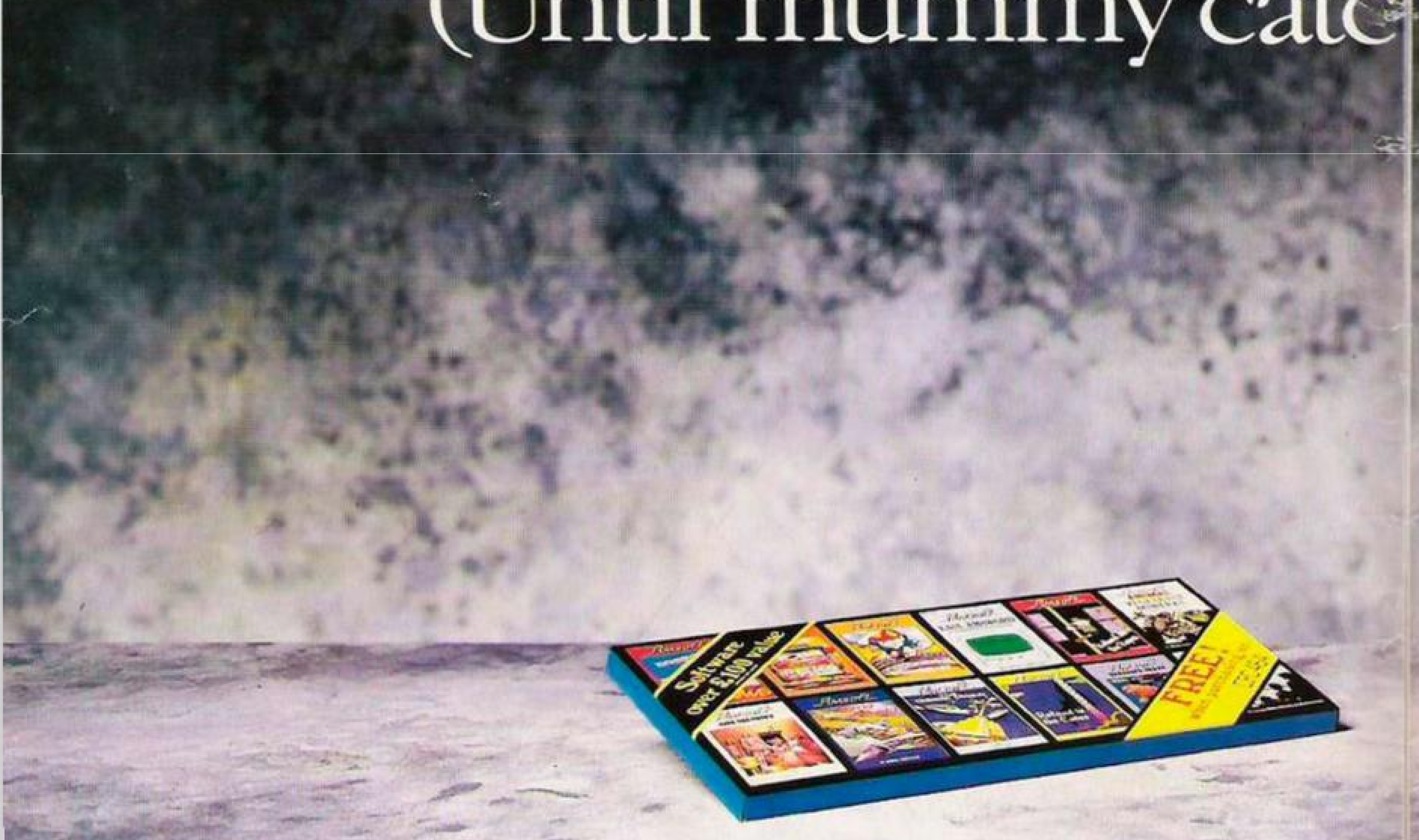
BEHIND THE SCENES AT THE INDEPENDENT

NOLAN BUSHNELL INTERVIEW

ELECTRIC DREAMS COMPETITION – ALIENS TO BE WON

HINTS & TIPS ★ SOFT FILE ★ CLUBS ★ NEWS ★ SOFTWARE PREVIEWS

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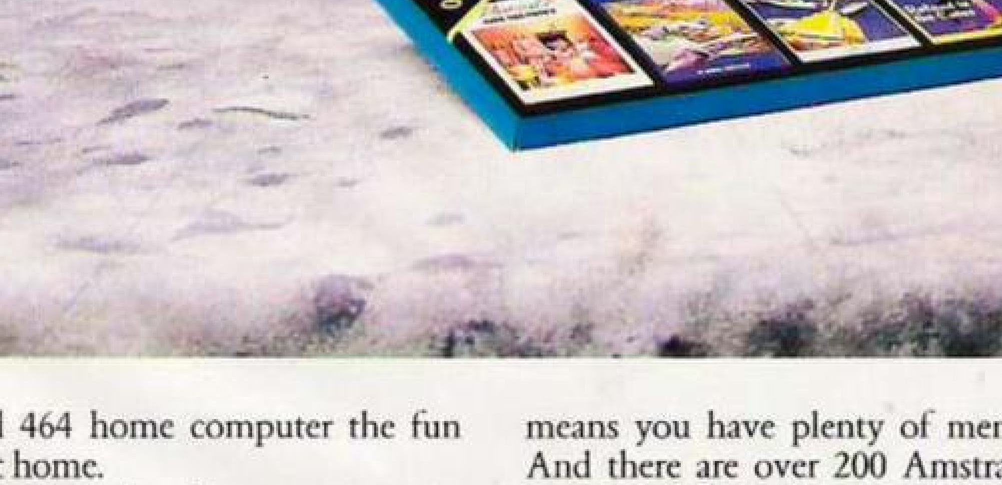
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Back issues of the magazine from January 1986 onwards are available for £1.50 (U.K.), £3 (Overseas) from the Back Issues Department, 79-80 Petty France, London, SW1H 9ED.

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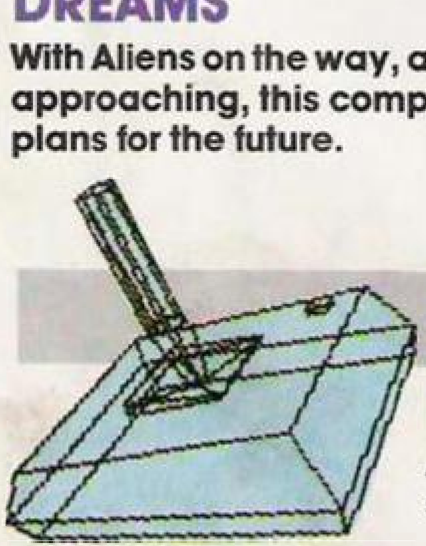
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With this issue *Your Computer* moves into its seventh year of publication. At the time it was launched hardware technological innovation was represented by the 1K ZX-81. Leading-edge software was represented by a Space Invaders game which would keep the games player of today amused for all of five minutes.

Through the years, *Your Computer* has developed with the maturing hardware and software industries, keeping readers up-to-date with the latest developments in the two complementary sectors which comprise the home computer industry. In that time we have reflected the many moods of the market since the earliest days.

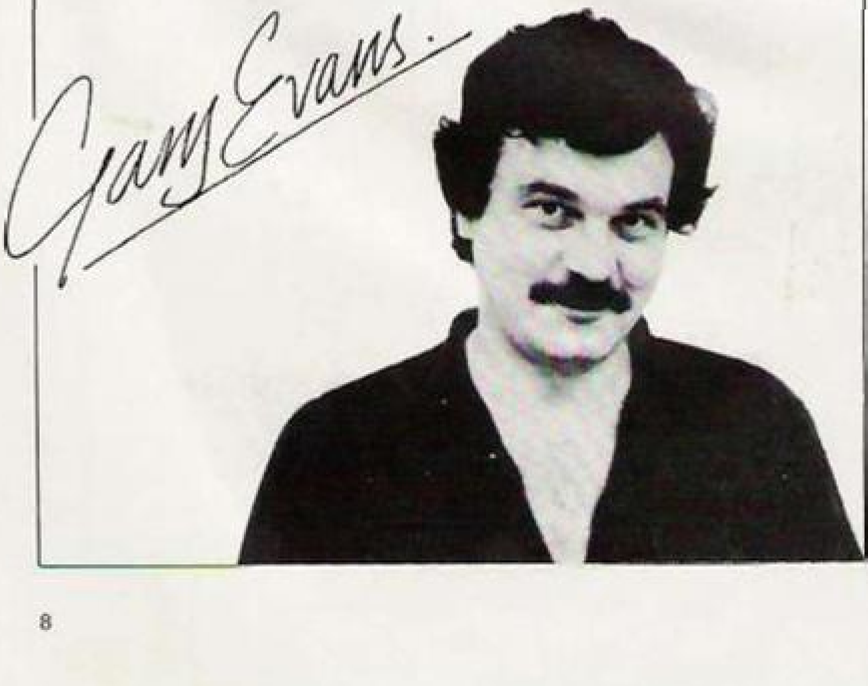
The initial euphoria which surrounded every new launch of 1983 and 1984 was, during the dark days of

COMMENT

1985, replaced by a mood of gloom and doom. While reflecting those views from the industry, *Your Computer* has always adopted a detached approach to its reporting of the market, refusing to be influenced by the emotional ups and downs of others.

That philosophy will be maintained as we enter the 1987 publishing year, though even the most detached of observers would conclude that the prospects for the year look far better than many would have thought a year ago. In 1986 Amstrad showed that the home computer boom is definitely not over. With the launch of its PC, it has opened a new and exciting market for the home micro user.

We wish all our readers a prosperous 1987, one in which they will continue to enjoy computing as a hobby. There should be plenty of exciting new hardware and software products to make sure that they continue to do so.

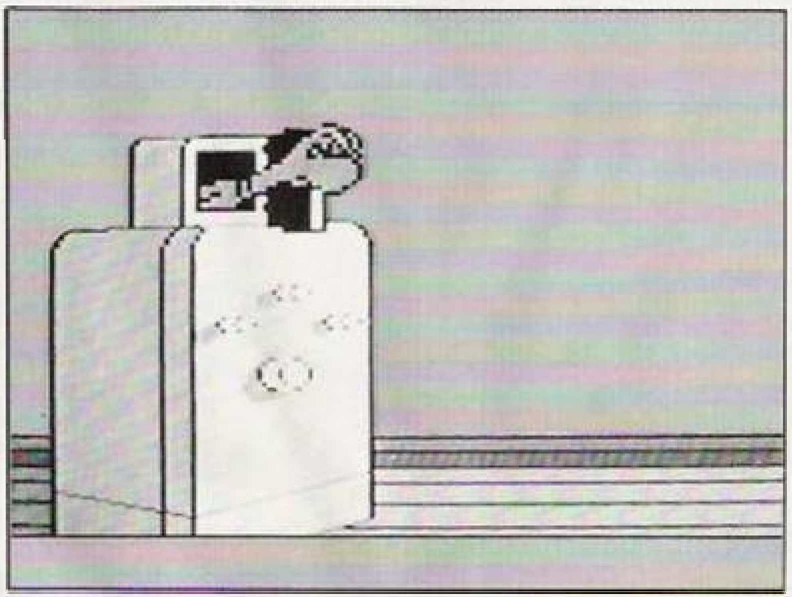


New Gadget

Inspector Gadget, that zany French detective, has finally become the subject of a new game for the Commodore 64 from Melbourne House. The storyline centres on the inspector hotly-pursuing MAD agents round a circus. In the circus the dastardly creatures have planted bombs and the inspector has to defuse them before they detonate.

All round the circus there are dangers intended to foil the progress of Inspector Gadget. There are fragile glass panes, boulders, snakes, bouncing balls and small lakes but the inspector is adequately-equipped with familiar items from the television program such as gadget skates, gadget legs, the gadget hammer and the infamous Gadget 'copter.

The game is fast and exciting, with plenty of action to keep the most dedicated gamers happy. *Inspector Gadget and the Circus of Fear* will be released this month and will cost £9.95 for cassette and £14.95 for disc.



U.S. Gold Competition

The competition in the October issue of *Your Computer* in conjunction with U.S. Gold presented a problem to some on question two. The major motor racing event which had taken place for the first time in Birmingham was Halfords Formula 3000 Super Prix. The following 10 winners were the first to be picked with the correct answers:

David Grierson, Cudham, Kent; Chris Holland, Camberley, Surrey; Malcolm Sims, Canterbury, Kent; Mark Watson, Comerton, Cambridgeshire; C. Williams, Liverpool; John Brooks, Cookham, Berkshire; Tracy Mallen, Quarry Bank, West Midlands; Ellery Phillips, Bury St. Edmunds, Suffolk; John Rees, Ammanford, Dyfed, South Wales; E. Walsh, Crowthorne, Berkshire. The lucky ones receive a T-shirt plus a copy of the popular game *Gauntlet*.

The 10 runners-up who will each receive a copy of the game are P. Chener, London N8; K. E. Hankin, Aldridge, West Midlands; Paul Wall, Willenhall, West Midlands; Kevin Young, Tolworth, Surbiton, Surrey; A. Chaplin, Kilcreggan, Dunbartonshire, Scotland; Jan Andrzejewski, Wigston Fields, Leicester; Dominic Bourn, Wolverhampton, West Midlands; James Winter, Wallingford, Oxon; Matthew Wood, Wolverhampton, West Midlands; James Turner, Baslow, Derbyshire.

Casio launches lap-top

Hand-held computers are without doubt the gadgets to own at the moment. In response to the huge demand for the products, it seems likely that Casio is to extend its range of personal basic pocket computers.

The new Casio model still in the pipeline is intended to have sufficient power to compete in the lap-top league and is said to have features such as touch-screen technology, built-in assembler monitor, auto-boot on power-up and a real-time clock and calendar which can initiate power-up.

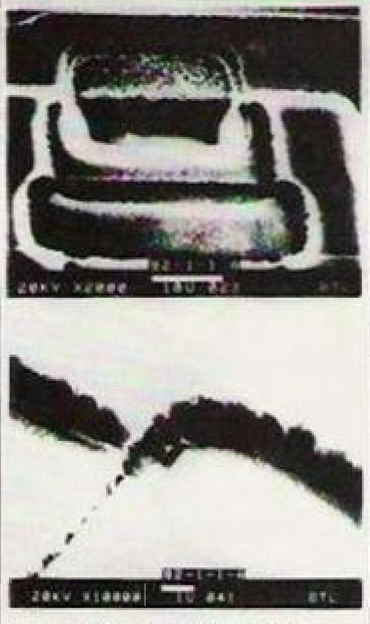


There will be a number of options, including a cassette interface which has RS232 and Centronics ports. In addition, there is a battery-powered 3.5in. disc drive option, providing 320K of storage.

The machine will probably be called the PB1000 and the possible starting-price with 8K of RAM is in the region of £140 including VAT.

Static attack

Most computer breakdowns occur between October and April. In the service business the period is called "the season" and it is attributed to the



RUPTURED GATE OXIDE

increase in breakdowns due to turning-on central heating systems in the winter months.

Static Buster is a new product which claims to help reduce the likelihood of breakdown during the 'season.' At £49.95 the device offers a permanent answer to the problem of static electricity.

Manufactured by IS Ltd of Rochdale, the Static Buster is intended to reduce the vast sums some companies spend on computer systems. While most people will spend a large sum on installation, not so many give much thought to the prevention of computer malfunction.

Repair bills in the U.S. last year were estimated at $823 million. Many could be attributed to static damage. As David Haworth of IS comments:

"The only people who are really profiting from the effects of static are those in the computer servicing and repair industry." With the promise IS offers, £49.95 would be well-spent on this useful device.

High-tech

A recent expedition to the Himalayas used a Walters PC/XT portable computer to collect information. The expedition, organised by the Metropolitan Police, conducted useful research into the beneficial effects of anti-hypoxia drugs which are used to combat the effect of small amounts of oxygen being delivered to the bloodstream. For mountain-climbers the effect of low amounts of oxygen result in fatigue and poor performance.

The computer, which was powered by specially-made power wedges which were recharged using solar panels, was used to store data and to conduct tests measuring cognitive and motor abilities.

The Walters portable was located at a height of 15,400ft. and the research was conducted by two non-police members of the team. It is believed to be the first time a micro with floppy drives and a standard VDU has been used at such a height to carry-out original scientific research.




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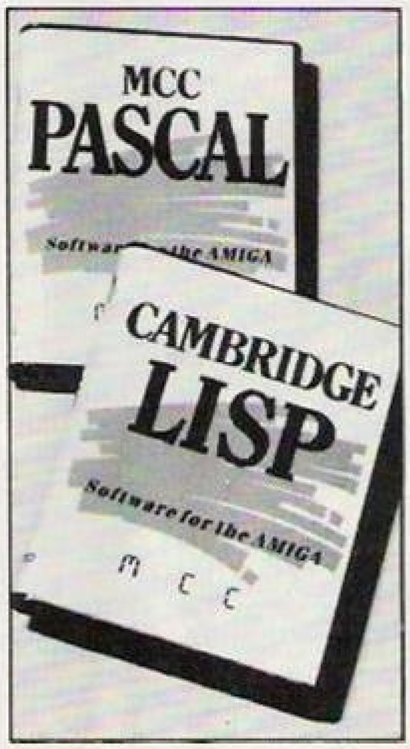
Independent update

The 1512 Independent User Group has made a busy start, dispute the comparatively small number of Amstrad PCs so far in use.

The group's helpline service has been offering advice and answering members' queries by telephone and letter and the public domain software library can now offer more than 500 discs, including a free British Accounts package and two discs containing a selection of the best DOS utilities. In addition, the group has just produced its first newsletter.

One of the original promises made to members of the group was special offer prices on hardware and software. The first offer is the NewStar *NewWord 3* word processing package at half-price. The software is offered to members at £149.

Readers interested in joining the group should contact 0959 24955 or 0959 22585.



Sure of Shell

Metacomco has launched the *Metacomco Shell*, an improved version of the standard Amiga command line interpreter which integrates fully with the entire Amiga DOS environment.

Features offered by the package include shell facilities such as command line editor, command line history, variables and push the pop directories.

The Shell is accompanied by a software diskette, manual and customer support information and is available at £49.95 including VAT.



Versatile portability

Epson, the company well-known for its printers and PC compatibles, is to have a range of EHT series of hand-held terminals available from February. Measuring 93 x 213 x 37.5mm. and weighing only 600 grammes, they offer extremely versatile configurations, with memory available from 64KB to 256KB of RAM and a system ROM of 128KB.

Featuring a large liquid crystal touch panel displaying 12 x 14 characters, the machine permits easy display of text or graphics. Also included is an RS232C-compatible port to allow connection to modems, printers and disc drives.

For further details of the machine or its potential applications, contact Epson on 01-902 8892.



Gem of a desk-top

A new software package for the Amstrad CPC range has been released by Advanced Memory Systems of Warrington. The package, *Max*, provides a graphic extension to the disc filing system, offering a front-end WIMP environment with a wide range of disc management operations.

Capable of operation with keyboard, joystick and AMX mouse, disc cataloguing into a window of up to two disc drives is possible, with the catalogue presented in icon form and sorted by name, file type or length. It is also possible to execute files in Basic and machine code. Selection of on-screen colours is also possible and the screen can also be dumped to Epson-compatible printers.

The package is available on disc with a manual and reference guide at a cost of £19.95.

Relatively cheap package

The latest product on offer from Tatung (U.K.) Ltd is a package which includes an Einstein computer and a 14in. colour portable television set at £349 including VAT.

The Einstein has 80K of RAM, a 3in. disc drive, a Centronics RS232 interface, analogue/digital converters and joystick, pipe and user ports. Designed and manufactured in Britain, the computer is an advanced disc drive micro which can meet the needs of business and home users.

The television set in the package is a Deccacolour 13-colour portable television with soft touch channel selection.

For those who still have money to spend after Christmas, it looks a good deal.



Book to help organise

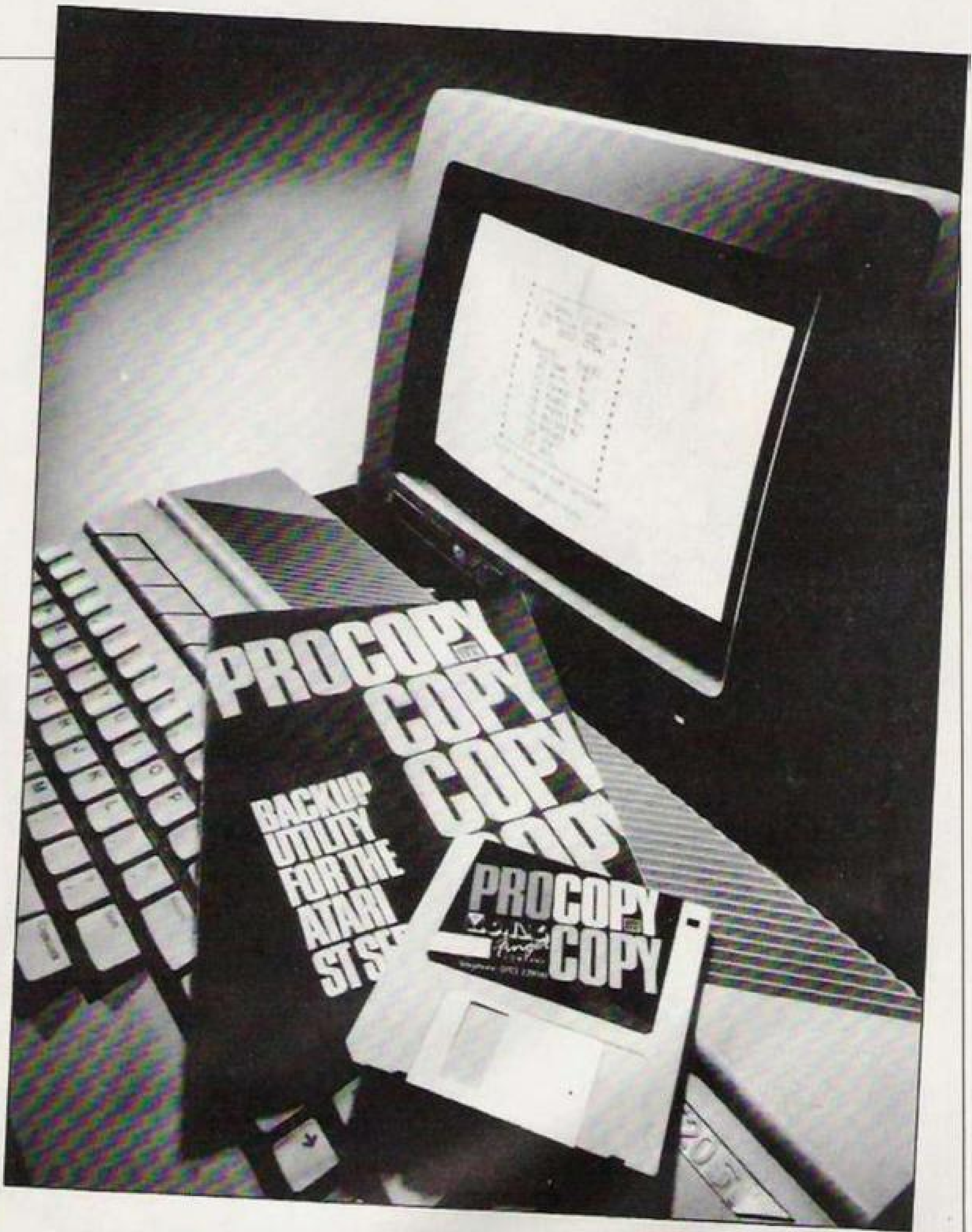
The amount of exposure given to the Psion Organiser II made it inevitable that someone would publish a book about the machine. *Using and Programming the Psion Organiser II* is the first to be published. Retailing at £9.95, the book by Mike Shaw contains a detailed explanation of how to use the Organiser II.

One of its aims is to enable readers to understand the internal functions of the Organiser and then to teach them to use those functions more fully by programming on the machine.

The book is well-written and the style makes it highly-readable for beginner and expert alike.

For more details contact Kuma Computers Ltd., 12 Horseshoe Park, Pangbourne, Berkshire RG8 7JW.

Copy-ing on the ST



A new disc copying utility for the Atari ST has been released by Southampton-based Moving Finger Co. The software package offers a number of disc copying utilities, including the ability to make back-up copies of protected software.

The advantage *Procopy* offers is the security of working from copies at all times. If the software then becomes corrupted or damaged, a new copy can be made.

The program is very easy to use, configuring itself automatically to the available disc drives and memory. Procopy can also format-and-copy in one operation and make a number of copies without re-reading the source disc, which offers a considerable time saving.

The package, with a detailed manual, costs £34.95 including VAT and postage.

More drive for Atari

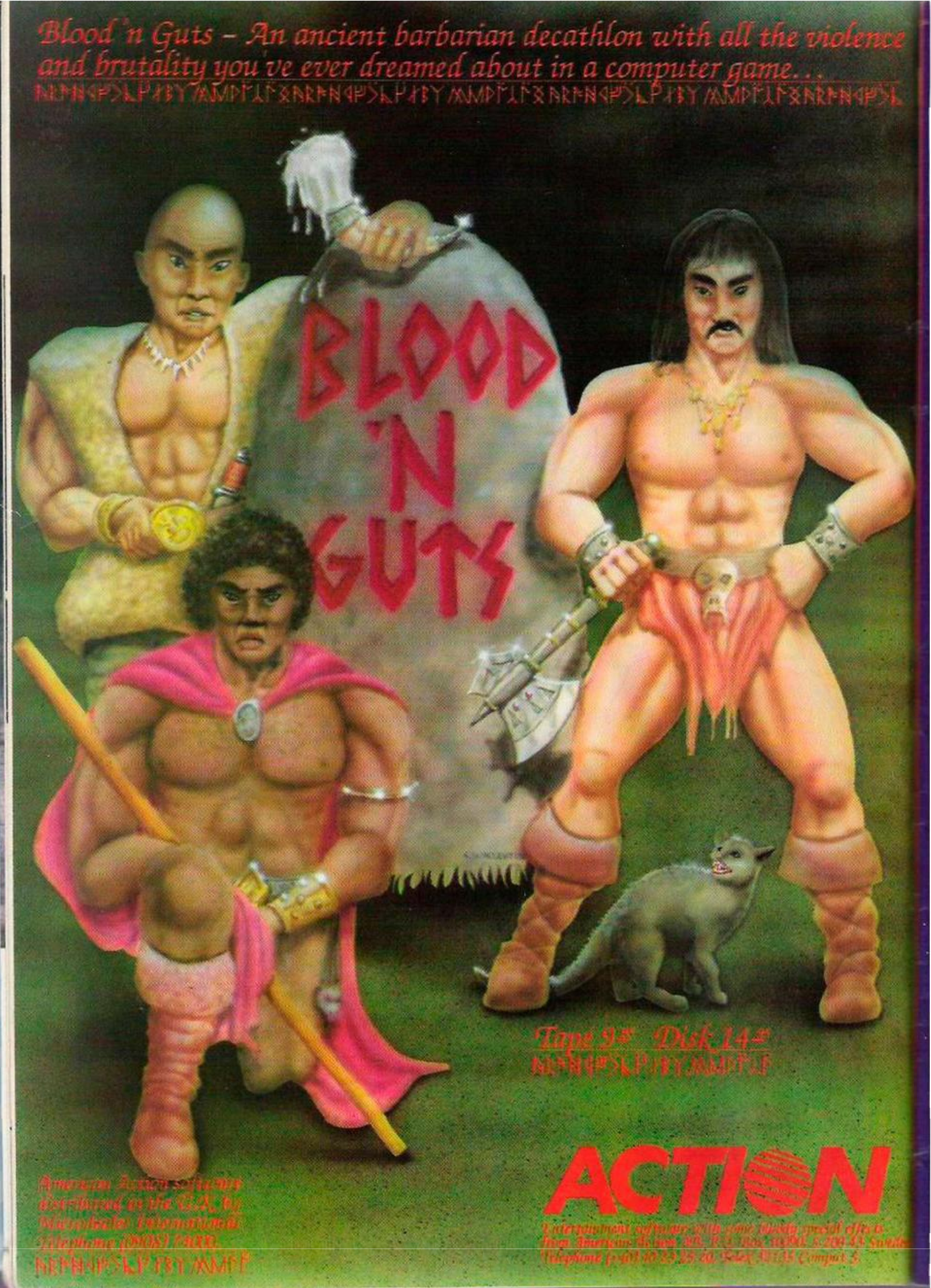
Cumana Ltd, the largest manufacturer of floppy disc drives in Europe, has launched a series of 3½in. and 5¼in. slim-line disc drives for the Atari 520 and 1040 ST.

The five models, which are colour-matched to the Ataris, feature fast access and high capacity, with all units being 80-track double-sided and giving a storage capacity of 1MB unformatted.

Included in the range is a 40/80-track switchable which allows the machine to read IBM and other compatible software formats for use in software development, or transfer to 3½in. media.

For further details contact Cumana on 0438 503121.




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This chart is based on the MicroScope chart as compiled by Gallup.

MicroScope GALLUP

MicroScope is the weekly trade paper of the microcomputer industry. If your computer store doesn't display the latest MicroScope chart, ask the manager to call Mark Salmon on 01-631 1433 — we'll send a copy every week.

THE CHARTS

TOP 20

1	TRIVIAL PURSUIT	DOMARK	SP CO AM BB
2	COMPENDIUM OF HITS 10 VOL. 3	BEAU JOLLY	SP CO AM BB C1 MS EL
3	INFILTRATOR	MINDSCAPE-U.S. GOLD	SP CO AM
4	WORLD GAMES	EPYX-U.S. GOLD	CO
5	PAPERBOY	ELITE	SP
6	1942	ELITE	SP CO
7	URIDIUM	HEWSON	SP CO
8	THEY SOLD A MILLION 3	HIT SQUAD	SP CO AM
9	FIST 2	MELBOURNE HOUSE	CO
10	GHOSTS AND GOBLINS	ELITE	SP CO AM C1
11	THE GREAT ESCAPE	OCEAN	SP
12	TRAP DOOR	PIRANHA	SP CO AM
13	BREAKTHRU	DATA EAST-U.S. GOLD	SP CO
14	DRAGON LAIR	SOFTWARE PROJECTS	SP CO
15	LIGHT FORCE	FIL	SP
16	DRUID	FIREBIRD	SP CO AM
17	GREEN BERET	IMAGINE	SP CO AM
18	FIVE STAR GAMES	BEAU JOLLY	SP CO AM BB EL C1 MS
19	ACE OF ACES	U.S. GOLD	CO
20	LEADERBOARD	ACCESS-U.S. GOLD	CO

BUDGET TOP TEN

1	180	MASTERTRONIC	SP CO AM
2	THRUST	FIREBIRD	SP CO AM AT (BB)
3	NINJA MASTER	FIREBIRD	SP CO AM AT
4	JULIE AND LISA	FIREBIRD	SP
5	KANE	MASTERTRONIC	SP CO AM BB EL C1
6	WARHAWK	FIREBIRD	CO AT
7	HAPPIEST DAYS	FIREBIRD	SP CO
8	BOMB SCARE	FIREBIRD	SP AM
9	SPEED KING	MASTERTRONIC	CO AM C1 MS
10	KAI TEMPLE	FIREBIRD	SP

BUBBLING UNDER

BMX SIMULATOR	CODE MASTERS	CO
COBRA	OCEAN	SP
FAIRLIGHT 2	THE EDGE	SP
KUNAME'S COIN-OP HITS	IMAGINE	SP CO AM
CRYSTAL CASTLES	U.S. GOLD	SP CO BB EL
YIE AR KUNG FU 2	IMAGINE	SP CO
SHAU-LINS ROAD	THE EDGE	SP
DRACULA	CRL	SP CO AM
XENO	A & F	SP AM

MACHINE CODES:
SP = SPECTRUM; CO = COMMODORE; AM = AMSTRAD; MS = MSX; AT = ATARI; V2 = VIC20

Gliding in



Stargliding.

Not content with releasing what has been acclaimed unanimously as the best-ever game on the Atari ST, *Starglider*, Rainbird now wants to clean up on all the other formats by doing what many people thought was impossible – converting Starglider yet keeping it playable.

When I first heard that this was the intention, I thought about how slow and different the game would be. Then I was shown a very early preview of the Spectrum version and, thankfully, I had not made any smart comments.

As you can see from the Amstrad CPC screen shots, the conversion has been quick and successful and, incidentally, versions for the Spectrum, Commodore and Amstrad PCW will be available soon. One less than impressive thing about Rainbird – there are no plans for a version of Starglider to run on the Jupiter Ace.



Tarzan on the C64.

Ah-Ahahaha ahahaha

This headline should be self-explanatory but it seems likely that many many not be familiar with the literary equivalent of Tarzan's famous cry. Martech, the company which released such classics as *Zoids* and, more recently *Uchi Mata*, has sent screenshots from the Commodore 64 version of *Tarzan*, promising that the finished product should be released relatively soon.

Not having seen the game, I cannot vouch for how good it is but, judging by past releases, it should be a cracker.

D-Day at U.S. Gold

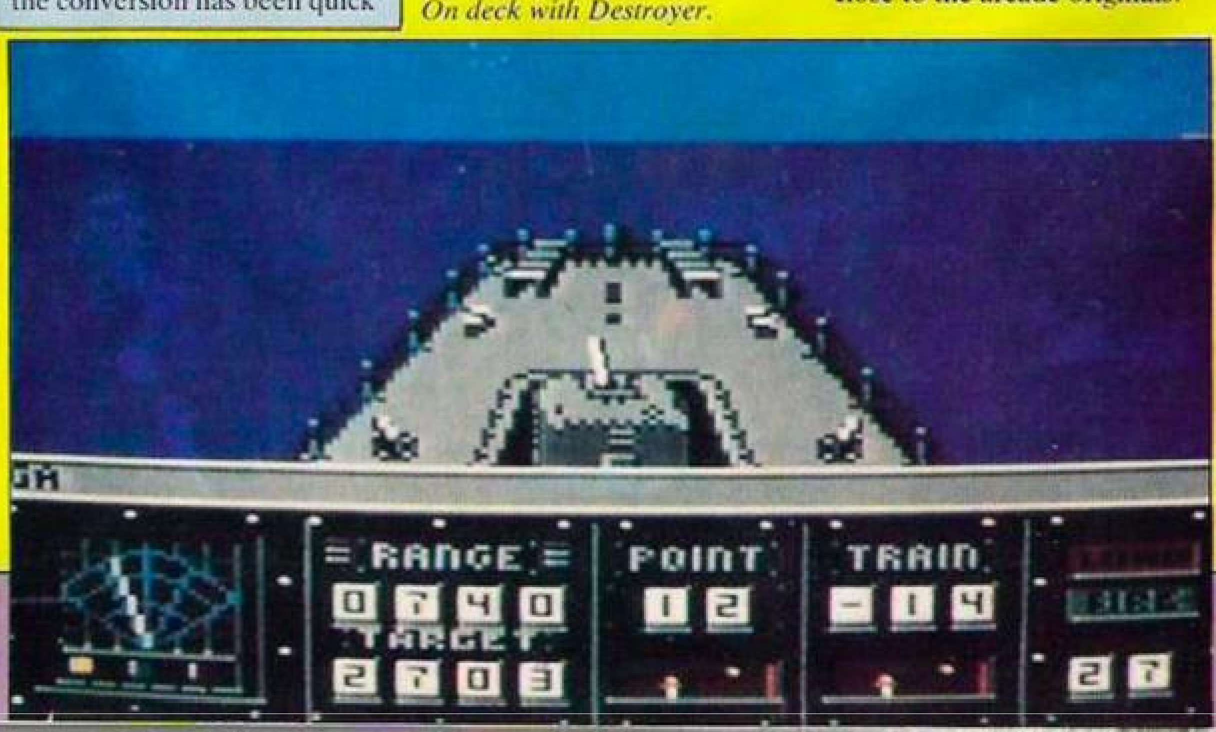
Everyone knows what licenses U.S. Gold has bought recently but how many people know how good the games will be? Having recently been visited by Richard Tisdall, I can claim to have seen a number of the latest U.S. Gold games and the answer to all the questions must be a resounding yes.

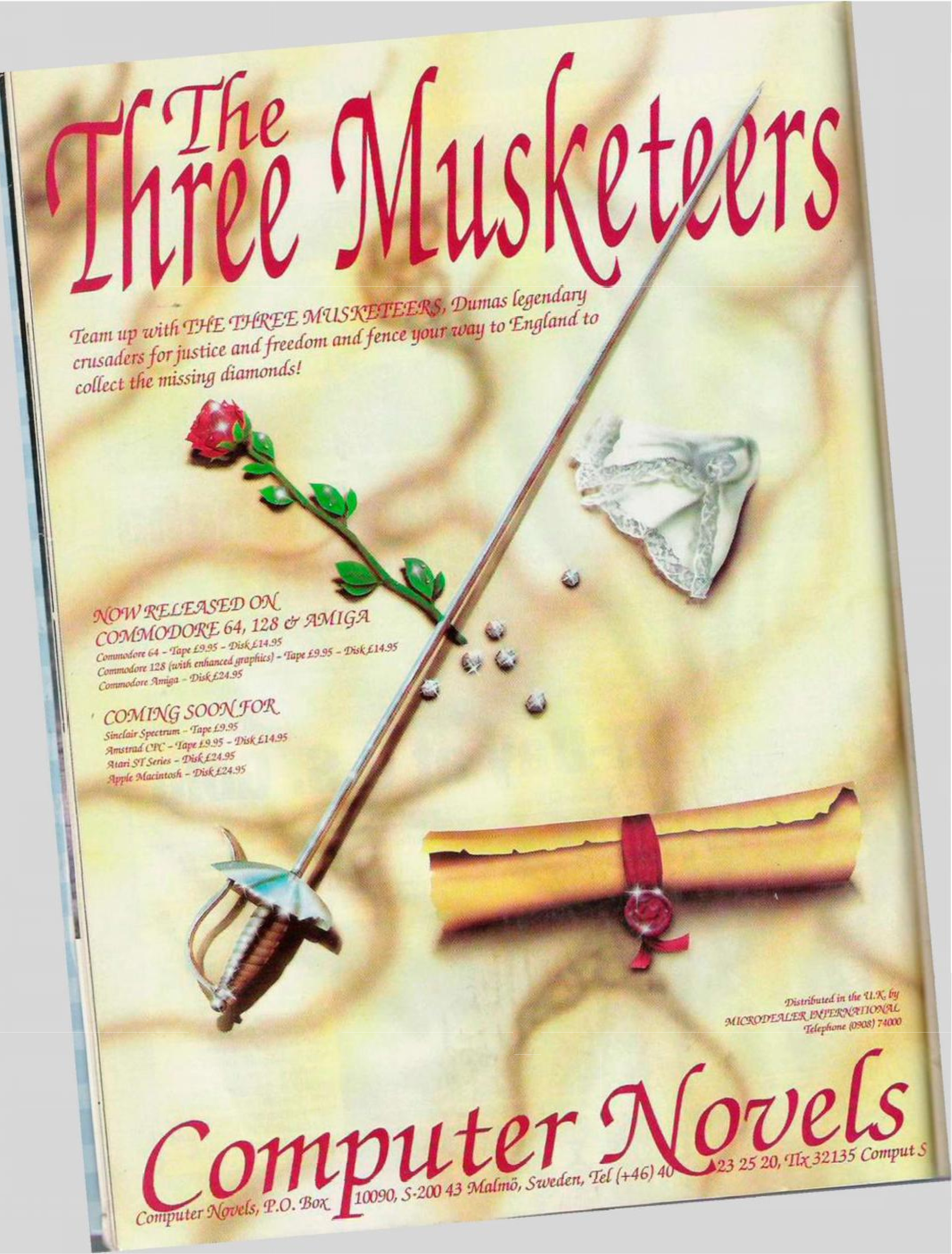
The games are near completion. They have stayed close to the arcade originals. *Destroyer* really is a Microprose beater and, more important, *Gauntlet* is a worthy conversion of the classic coin-op.

The nearest version of Gauntlet to completion is the Amstrad and with music and effects by Ben Dalglish of W.E.M.U.S.I.C. fame, it is by far the best of this type I have seen. Unfortunately it is also the last.

Another conversion almost completed is *Xevious*. Programmed by Probe Software, the company responsible for, among others, *Basildon Bond*, the game should be released by the time you read this. Adventuresoft is also well into the programming of *Masters of the Universe* and the arcade game is looking very impressive.

On deck with Destroyer.

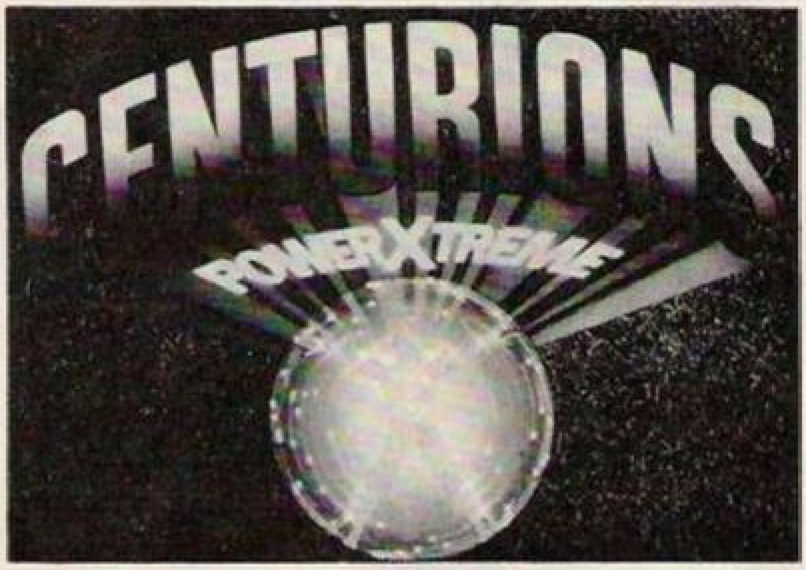




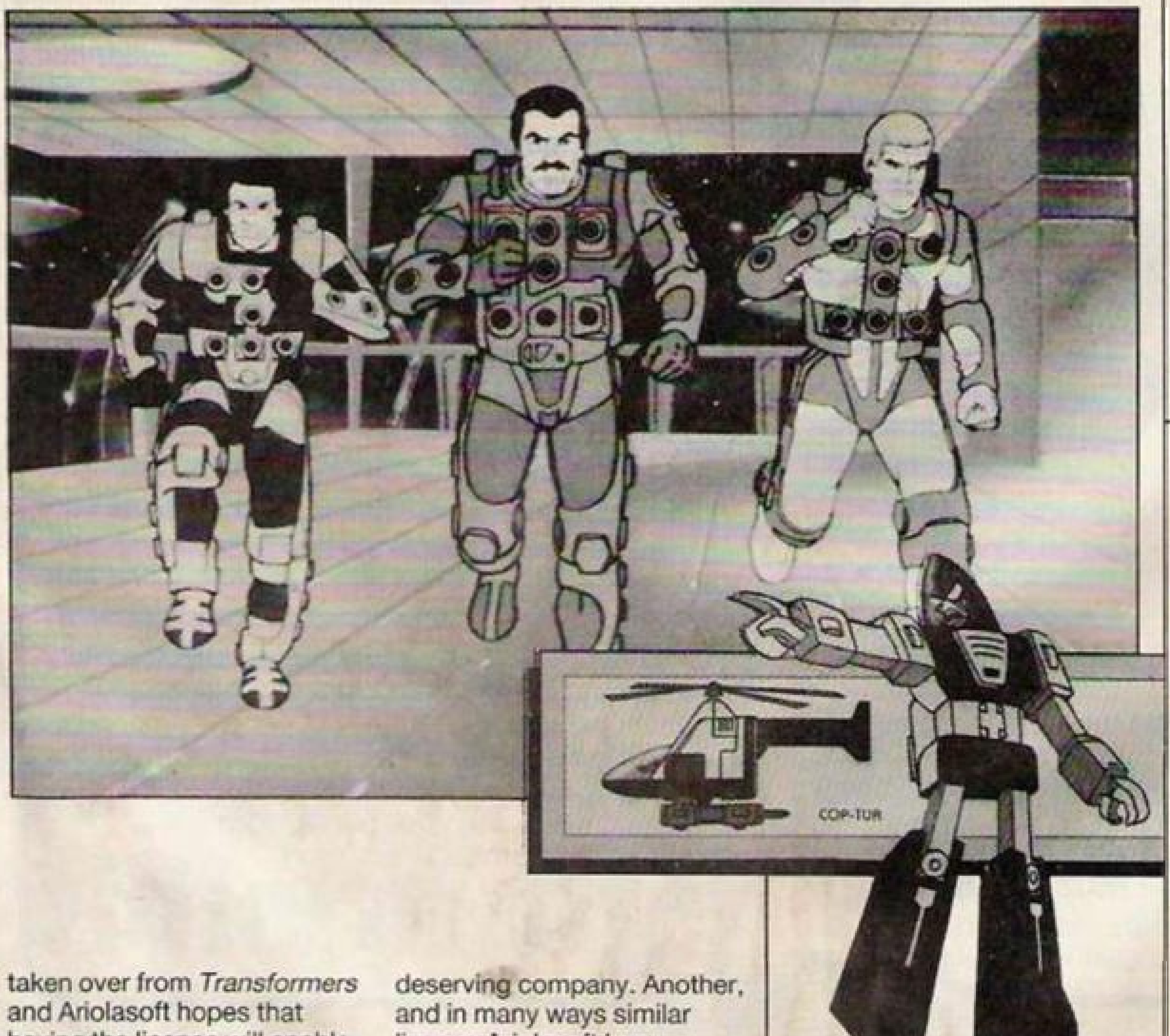
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PowerXtreme

Anyone who has ever switched on the television at some point on Saturday morning cannot have avoided seeing the latest cartoon to have caught the imagination of children all over the country, *Centurions*.



Doing for them what Batman and Robin did for me, the cartoons surround the exploits of various armour-clad do-gooders who cannot stand any kind of evil. With a deep-voiced catchphrase which is repeated every time they wish to change from Mr. Joe Public to some wall-crushing hero, the series has taken over from *Transformers* and Ariolasoft hopes that having the licence will enable it to make a killing.



With a game based closely on the cartoon, and designed by Mark Eyles, the man responsible for *Aliens* – see the Electric Dreams profile – it should be available soon and promises well for this deserving company. Another, and in many ways similar licence Ariolasoft has obtained is *Gobots*.

In the U.S., Gobots are the most successful toy in the Transformer mould and, with their own 65-episode TV series, that is perhaps not surprising. What is surprising is the lack of public awareness.

Wait for it

World Games requires more research than we thought but there will be a full guide to the game in the February issue.

Popular Yie-Ar

It was just 20 years ago that Lee, the Kung Fu master, wiped out the dastardly Chop Suey Gang. One member of the gang has survived and, having changed his name from Yen Pei to Yie Gah Emperor and, together with his seven warlords, his power has extended throughout all China. You play the original Lee's son, Lee Young, and you have stepped forth to fight this evil emperor and his comrades.

To rid China of the evil emperor you will need to face eight opponents, all with their own weapons. In order they are: 1, Yen Pei, iron pigtails; 2, Lang Fang, fans; 3, Po Chin, fire breather; 4, Wen Hu, flying mask; 5, Wei Chin, boomerangs; 6, Mei Ling, daggers; 7, Han Chen, bombs; 8, Li Jen, lightning bolts.

With many similarities to the original, *Yie Ar King Fu II* will probably be another smash for Ocean and the added feature of simultaneous two-player mode should also add to its popularity.

More war

Far from being a quiet, Coventry-based war-gaming software house PSS has recently announced two releases, both of which promise great things for the dedicated war-gaming fan. The first, *Battlefield Germany*, is the eighth title in the PSS Wargamers series and uses the latest in artificial intelligence technology to allow the player to explore the tactical and strategic intricacies of modern warfare in the Warsaw Pact.

The second game is *Annals of Rome* and has a timespan ranging from 273 BC to the eleventh century AD. The object is to survive and expand. Both games are available initially for the Amstrad and Spectrum, with a Commodore 64 version arriving later in 1987.

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P.S: We are also looking for 6502/Z80 programmers for urgent conversion work.

New Amstrad modem

Bradford-based Pace Microsystems, supplier of the somewhat elderly manual Nightingale-based Amstrad modem, is putting the finishing touches to a new Amstrad modem which will probably be aimed at the new fraternity of PC1512 users. Best-informed guesses are that the modem will be completely software-driven, in the tradition of the upmarket Series 4 and budget Linnet smart modems, and will probably be marketed to take advantage of the new Digital Research GEM Comm package.

To compete with what is available at present, the device will probably offer V21/23 with a 1,200 baud full duplex (V22) upgrade option. There are no prices or launch dates yet.

Electric control

Chris Curry, joint founder of Acorn, recently set up a new company, GIS, to research and develop a branch of comms along a very different line – electricity mains wiring.

With the brand name of Red Box, the system is home computer-controlled – Spectrum, BBC, Amstrad CPC or Commodore 64 – and effectively allows data to be sent to and from special mains-connected modems in controller terminals round a household electricity ring main.

Devices which can be controlled include a remote switch, with built-in remote programmable timer, and an infra-red sensor. With data-reliable transmission rates of up to 2,400 baud, GIS predicts the system will be used as an extremely low-cost local network linking micros to other micros, data samplers, as well as devices which require controlling.

Difficulties in getting similar systems to work acceptably have defeated giants such as Thorn EMI in recent years but with intensive software and hardware development, the Red Box system works, is cheap – individual units cost around £35 each – and GIS has eliminated the problem of intefering with other similar Red Box installations nearby with a sophisticated data encryption system.

Eventually auto-answer telephone modems could be linked to a Red Box network for distant remote control of, say, household heating. Telephone lines might one day be eliminated from the equation. Certain electricity boards are experimenting with their own high power/long range electricity line data transmit/receive systems for reading meters and even controlling individual heaters in disabled peoples' homes.

Kirk's Enterprise to Dixons

For the first time, you should be able to buy a modem from most branches of Dixons, which should be a positive boost for both the comms industry and Kevin Kirk's Kirk Automation, as it is his Enterprise range of modems which Dixons has chosen.

Despite selling a wide variety of home and business computers, it is the first time Dixons has gone wholeheartedly into comms, though some selected dealers have been selling Sage Chit Chat modem packages based on the Pace Nightingale.

Legends in the States

A version of the BT Muse MUD, itself a version of the original Essex University Multi User Dungeon, has been sold to the States in a deal which will make the game available to the 250,000 Compuserve subscribers for the first time.

Apparently the Americans do not like the acronym MUD and will tag the service British Legends.

Music MUD runs on a DEC VAX, though the Compuserve version will return to the rather larger DEC System 10 mainframe monsters on which Essex MUD was written originally. Compuserve has 63 of the machines.



Miraculous Vidterm offer

The much-touted Triangle Software user-friendly comms package for IBM PCs and compatibles, *Vidterm*, is being virtually given away by the company if you buy a Miracle Technology WS4000 modem from it. The offer stands at £149.95 – five pence dearer than the normal price of a WS4000 on its own.

The package is aimed at first-time users who want a plug-in-and-go, easy-to-use system, though Triangle emphasises that powerful features exist also for those who want to use them.

In the meantime, Triangle is setting-up its own Bulletin Board for Vidterm users.

GEM Comms package

Digital Research has announced GEM Comm, a full viewdata and ASCII scolling text comms package with file transfer facilities. GEM Comm is a customised version of the much-honed AM Technology Vicom package, popularly used on Apple Macs, among others. The package is designed with Hayes-compatible smart modems in mind and costs £99.95.

New Dowty factory

You have never heard of Dowty? Well, the largest U.K. manufacturer of modems seems to be intent on being more of household name and recently had world land speed record holder, Richard Noble, to open its new factory at Newbury.

Dowty recently passed its 100,000 modem mark, most of which are sold under other people's more famous brand brand names, including the likes of ICL, Motorola, Apple, Apricot, BT – and even car manufacturer BMW.

LETTERS

Calling all contributors

We welcome your comments, hints, complaints and opinions on machines and software and even the magazine. We have received many letters recently from readers who are interested in writing articles for the magazine, so here are a few guidelines for submitting your work.

Articles should be typed double-spaced, on A4 paper and have a name and address securely attached. If you enclose a disc or cassette it should also have your name and address clearly marked, as well as the type of machine on which it runs.

Programs must have a cassette or disc enclosed with instructions and a brief description of what the program does. Letters can be hand-written provided they are legible but regrettably we are unable to reply personally to each letter.

We pay £35 per published page, except for the letters page, where we award £25 for the best letter each month. Finally, for those interested in Software Exchange, we pay £50 per program and 25 pence per program for sales exceeding 100. We look forward to hearing from you.

More listings, please

I am writing to protest about the apparent naivete of *Your Computer*. In a country where more than three million people are unemployed, how many readers can afford the latest gadget or the newest games? I would guess that the answer is very few. As one of the three million, I used to buy the magazine for the excellent listings, which helped pass the day very well, and the results were usually excellent.

Now, however, even the listings cost money. Pull up your socks, publish more listings, and give readers features on how to write better programs, so that we do not have to buy the latest games.

M. McGill,
Honiton.

Editor's reply: The reason we no longer print pages of machine code listings is twofold. First, the simple fact of cost restricts the number of pages we can allot for readers' programs when they could be used for editorial material. Second, the diversity of machines on the market makes it impossible to cater adequately for each one. While older issues of Your Computer *had many more pages of listings, they were for a smaller number of machines. It is unfortunate that we have to reduce this popular part of the magazine but sadly it is unavoidable.*

Let's hear it for Amstrad



I read with interest your November issue but I feel I must complain about the coverage the magazine gives to the Amstrad CPC range of computers, especially on the games front. Of the 16 games reviewed, only two were specifically for the Amstrad, compared to six each for the Spectrum and Commodore 64, machines which are unquestionably inferior in every department.

Any Amstrad owner will tell you that the machine is so far superior to the ageing Spectrum as to be incomparable. The graphics, sound and operating system are all better, and the new crop of games from software houses such as CRL and Ocean only go to further the excellent reputation this machine is gaining.

One final point. Anyone who owns a Spectrum or Commodore should think seriously about selling the machines and buying a CPC; it is the games machine of the future and *Your Computer* should reflect this fact.

D. Jenkins,
Doncaster.

Editor's reply: When reviewing new games we can cover only the software released in that month. If that means the choice between no games reviews or a bias towards one computer, I think most readers would prefer to see the games reviewed despite any unavoidable bias. Your point about Spectrums being inferior to the CPC range seems a little controversial and I would be inclined to delay my reply until Your Computer *readers have aired their views.*

Help cry from a beginner

I have been using my 8256 Amstrad for several months. I am still learning all the ins and outs of the PCW and I believe that this is attributable in part to the quality of the operating manual supplied with the computer. Although it is probably well-written, it seems to assume a certain degree of computer literacy which would appear to be somewhat of a contradiction, as the machine is intended for use by near beginners like myself. As a result, I am looking for some more understandable books on Locoscript and CP/M. Perhaps you could suggest some good titles.

J. Causier,
Basingstoke.

Editor's reply: There is a variety of books available. Any good bookshop should have a selection of titles in this field, as will most computer retailers. Failing that you could buy our sister publication, Putting Your Amstrad to Work, *which has up-to-date information on book releases.*

Key-bounce problem

I have been a Spectrum owner for about three years and my current machine is the Spectrum 128, which I have owned since March. Despite my loyalty to the machine I share the criticism of the keyboard, as typing quickly is difficult with the amount of key-bounce which occurs.

I have been looking at the new Amstrad 128+ and would like to know if the machine is basically the same underneath its re-designed exterior, because if it is it would be cheaper for me to buy one of the keyboard upgrades available.

P. Cain,
Exeter.

Editor's reply: You are correct to assume that the new Amstrad machine is basically the same old Spectrum underneath the new design. The machine is offered only as an upgraded version of Sir Clive's model and has a number of advantages, such as the built-in cassette recorder, which obviates all the problems faulty leads can create. If you have all the necessary equipment, which I assume you have, the obvious course would be to buy a replacement keyboard.



Grateful thanks

Readers probably realise that Your Computer *receives a great deal of professionally-produced software each week for review. As we do not have storage space to house the cassettes and discs, after two months we have to dispose of them, normally to a charity organisation. Several weeks ago we sent a large amount of software to Dr. Barnardo's and this is the reply we received:*

On behalf of Dr. Barnardo's may I thank you for your most generous gift. The computer games have been given to residential schools in our London and Yorkshire divisions and they have asked me to thank you on their behalf and tell you how pleased they were with your thoughtful gift.

Joyce Clay,
Public Affairs Officer,
Dr. Barnardo's.

Computer mail

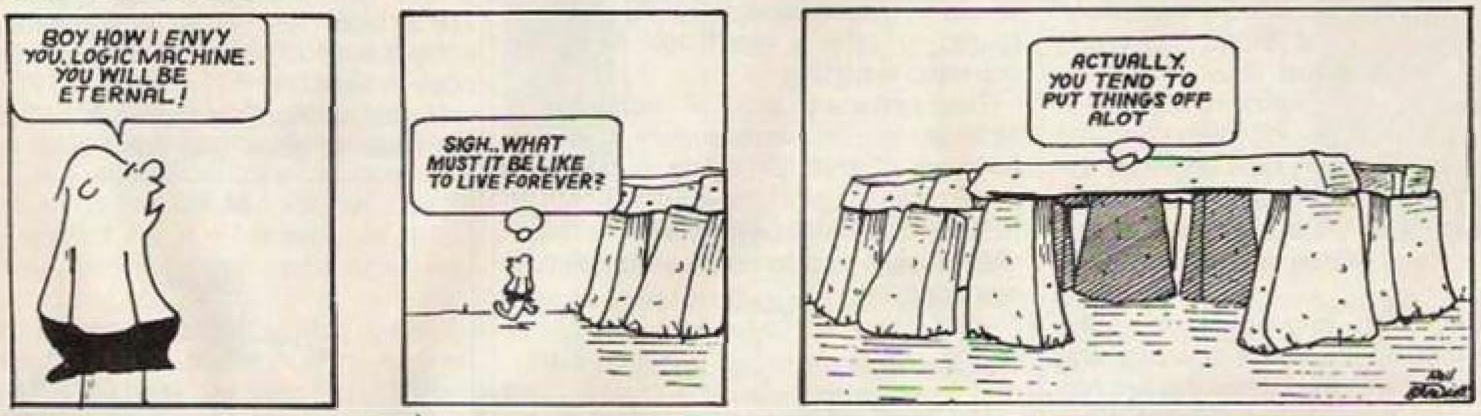
I am interested in opening an electronic mail box but know very little about them. What kind of features should I be looking for and what price should I expect to pay? If I take an account with a particular company, would I be restricted to correspondence with other account holders or could I contact other companies' clients as well.

M. Kirk,
Bournemouth.

Editor's reply: The three companies on which you should concentrate are Telecom Gold, One to One and Easy Link. The services offered by those companies are similar and it would be best to contact all three to assess which best suits your needs. Prices are related directly to the type and number of services you use but there are generally monthly payments.

MAN LOGIC

By NEIL BRADLEY



INDEPENDENTLY SPEAKING

The Independent is the first in what could be a generation of computer-produced newspapers. This month John Barnes looks independently at how the paper is produced.

The revolution which has been changing Fleet Street has made news for some time. The main issue of the dispute is not one of pay but technology. Print workers and typesetters for a long time opposed the introduction of modern newspaper technology which has been used widely in the United States for a number of years.

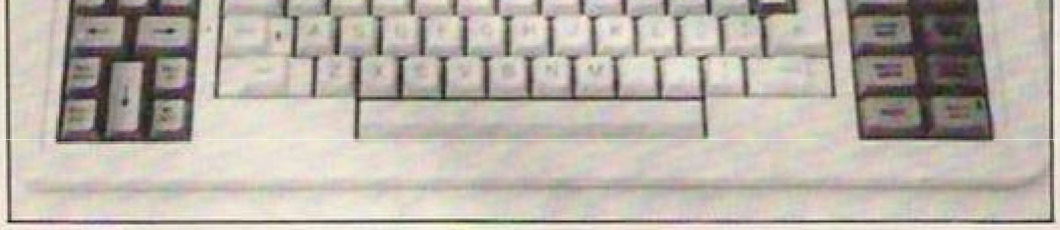
The technology in question makes the role of normal typesetters obsolete and also requires less work once the film has arrived at the printers. In moving to Wapping, Rupert Murdoch's News International changed the daily production of *The Times* and *Sun* to a computer operation, disregarding what he considers the obsolete, outdated way Fleet Street operated previously.

As tempers flare and daily television news reports provide different views on the events at and surrounding the Wapping dispute, other aspects of the Fleet Street revolution are largely ignored. The initial fuss which surrounded the launch of Eddie Shah's *Today* has died considerably, while *The Independent* has managed to slip through the net of the various trade unions enraged about the state of affairs in the newspaper world and has begun to gain a reputation for good unbiased reporting.

The apparent lack of publicity is strange, as *The Independent* is at the forefront of this revolution, having the added advantage of being able to start in a position which established broadsheets are trying to reach – completely computerised.

ATEX a first

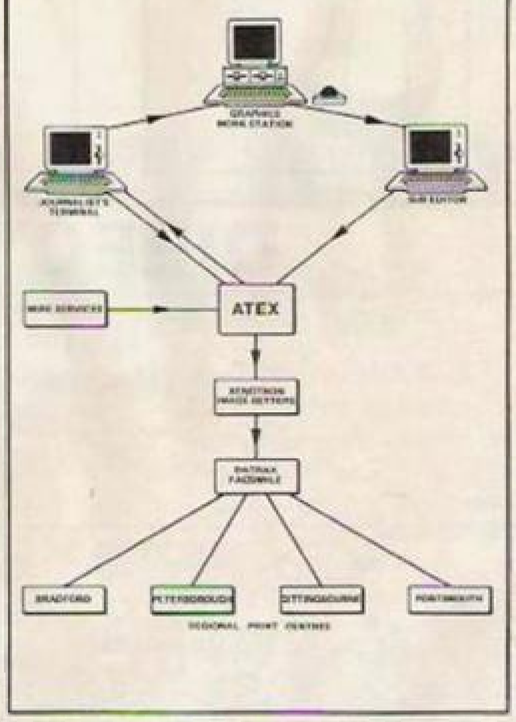
The heart of *The Independent* is an ATEX editorial direct input system manufactured by the American Eastman Kodak Group, the world's largest supplier of newspaper systems. This system is well-proven, having been used in Europe and the States for a number of years. *The Independent* has a 10 CPU system, eight of which are used by the editorial department and two by advertising. On the system are two programs, the standard editorial package and the news layout system. Despite the widespread use of the ATEX system, *The Independent* can claim to be one of the first publications to use the news layout package for the whole paper.



The ATEX graphics workstation keyboard

There are 170 ATEX terminals, both for the direct input of copy and for page layout. The editorial copy for the newspaper arrives from a variety of sources. Correspondents are equipped with Tandy 200 lap-top computers which they use in conjunction with modems to transmit copy to *The Independent* offices, or if communications are too poor they will Telex their copy to London.

Local reporters also use the portable terminals to write and send copy and reporters based at the City Road offices use one of the 170 terminals. In addition there are wire service transmissions, either on the company's IBM PC network for writers or from the news agencies such as Reuters, AP, UP and Agence France Press and the various sports and financial services. Altogether there are about 16 or 17 wire services received by the ATEX and then sorted into different categories, such as sport or financial, and filed for use of journalists during the day. Each journalist has his own ATEX terminal and each of the editorial desks, such as sport, home, foreign, has its ATEX graphics workstation for page layout.



The Independent's ATEX system.

Copy, once written, is passed to the graphics workstation and it is that part of

the system which is most impressive to the onlooker. The graphics workstation has two different screens. First, the empty page and the list of copy with its typesetting requirements such as the kind of typeface to be used and the length and style of the headline. It is the job of the layout artist to ensure that all copy fits on to the page and that the final result is aesthetically pleasing.

A number of photographs will need to be positioned on the page but rather than store them on the computer, which would use a tremendous amount of memory, they are sized in the traditional way and a correctly-sized space left for them.

Time-saving

When a page has been laid out the information for the size and style is fed back to the sub-editors' desk and the article has to be subbed accordingly. The ATEX will not allow copy of incorrect length to be laid out and will cut lines if they exceed the number required. It is therefore very important that articles are edited to size.

While that type of sub-editing can be a headache for the sub-editors, it means that once the copy has been released for typesetting there is nothing more to do to it, which is not only more efficient but also saves valuable time.

Once the copy has been edited to strict limitations it is possible to create an image of how the printed page will look on the workstation monitor. The image will be identical to the printed page and will include the copy set to the different styles and headlines. The only part of the page which will not appear on the monitor are the photographs and any standard artwork which is used.

Once that stage has been completed, the copy is then ready for typesetting. It is that stage of the process which is so different from the traditional method. Originally the process was manual but the ATEX system is able to complete that task as well. The copy is typeset on Xenotron image-setters, taking from a machine called the Art Master any standard artwork needed, and then photographs are inserted into the completed page make-up.

The scanners connected to the Art Master can also be used to enhance the quality of photographs by lightening or darkening them so that a better image is obtained.

As page proofs are produced they are transmitted to the four regional print centres via British Telecom Megastream lines using Datrax facsimile machines. They are page fax machines which are the same as dot fax machines but the resolution is much better.



The page layout screen on the ATEX workstation.

With the machines, two pages at a time can be sent and they can burn plates, plastic short-run plates which can produce up to about 50,000 copies, which can be used for printing. *The Independent* has print centres in Bradford, Peterborough, Sittingbourne and Portsmouth, each of which is equipped with Crosfield Datrax receiving units.

Distribution is also controlled from the City Road offices. There are 320 wholesale agents used by the paper serving in the region of 40,000 retail outlets throughout the U.K.

Using an IBM System 38 computer, each of the orders from agents is processed and labelled. With the system it is possible to adjust the printing requirements according to the type of orders placed each day. That obviously makes the printing of the paper more profitable, as if the print run needs to be increased because of an important story, that will boost sales. If it is reduced because orders for a particular day have fallen, adjustments can be made almost instantaneously.

Newspaper Publishing plc employs 350 people, 178 of whom are journalists. The journalists represent a wealth of experience, with many having worked on familiar titles such as *The Times*, *The Guardian*, *The Daily Telegraph* and Sunday papers such as *The Observer*. The number of employees to have worked for the BBC is also impressive.

Founders of *The Independent* believe that Fleet Street has failed to adapt to the changing needs of the reading public in the last decade, staying with their traditional formulae and failing to adapt to the changes which have taken place both in the media and the reading public.

That belief forms the basis for the editorial formula at a very specific readership which is believed to be sceptical of between 20 and 30, or more simply young professionals. *The Independent* believes that those people are very busy and that the time they allow themselves to read newspapers is fragmented – often reading for short periods on the way to work, over coffee or lunch, on their return journey from work and at home in the evenings – and, more often than not, relying on television news broadcasts for details concerning the current news stories.

Changing readership

While existing broadsheets have attempted to cater for those needs by introducing news in brief columns, that is not really sufficient. *The Independent*, however, seeks to complement rather than duplicate news broadcasts, aiming to take readers beyond the point where TV and radio must stop.

As many people will know, especially those who have seen or heard the endless television or radio commercials, the paper remains politically independent, largely as a function of its target readership which is believed to be sceptical of party politics and remaining largely neutral but still retaining the integrity to query the Establishment and to campaign on issues which arise from its own reporting, analysis and internal debate.

The founders believe that good reporting will be the foundation on which *The Independent* will build. Launched in October, the paper began life at a time when the old methods of Fleet Street were being rejected in favour of the new, the kind of methods being used at City Road at the moment.

The Independent has, therefore, given itself a considerable advantage over its rivals by already operating with new technology. Time will tell how successful it will be but the reputation it has already gained suggests that the paper will not disappear in a hurry.



CRL's Dracula.

ADVENTURE LINE-UP

Christmas arrived early for me in the form of a Commodore Amiga – a truly remarkable machine. The best part was that it enabled me to play two Infocom games which had previously eluded me, *Trinity* and *A Mind Forever Voyaging*. I will deal with them in more detail next month. What I like about the Amiga is that each game loads in its entirety so there is no waiting for the normal disc access before continuing.

Let us hope we see more quality adventures like *The Pawn* being produced for this superb micro. Even arcade games look good on it.

This month's mixed bag includes dealing with mysterious happenings at an old Cornish castle, an epic monster-bashing RPG, a quick sojourn into the heart of Africa, a new Quilled adventure from M42 Software in which you play Bluebeard's wife, and a terrific new game from Activision.

The most interesting item this month is that Level 9 and Delta Four have joined forces to write a spoof adventure which will be released at Easter. To quote Mike Austin of Level 9, "The storyline is wondrously funny. It will be the best spoof adventure ever." St. Brides, are you listening?

I hear that Adventurers Club Ltd is back in business. I feel I would have to be 100 percent certain it is before sending a cheque. Rumour also has it that *The Guiding Light* is closing. Far from it. In fact the magazine is being produced bi-monthly in a larger format and at the same price and also boasts the distinction of having Dave Lebling, president of Infocom, as honorary chairman.

U.S. Gold is set to release the full range of Strategic Simulations fantasy RPGs. They include *Phantasy 2, Wizard's Crow, Rings of Zilfin* and *Shards of Spring*, a veritable feast for RP freaks. There is also news of a wargame construction set, in which you can create your own scenario, whether it be fantasy or war.

Two new adventures written by using GAC and released by Incentive on its new Medallion label are *Winter Wonderland* in which you crash-land your aircraft into a rather cold and snowy place, and *Apache Gold*, which centres on finding treasure in an ancient burial ground. What I would like to know is what has happened to *Axe* and *The Ket Trilogy* which were due sometime ago.

Gilsoft has added another utility to enhance *The Quill*, entitled *The Press*, which will allow you to compress your text, thus getting more text into your adventure.

READERS' FORUM

James Burton sends his best wishes to Adventureline. "I have received tremendous help from Geoff and Jackie but I am still hopelessly stuck in the Infocom *Trinity*. It would appear Burton keeps getting killed by some oriental parents. He also wants to know what he should do to stop his blood over-heating. Apart from switching off the computer, can anybody help?

Kelly Medori writes from sunny Milan wanting to know how to get the cube from the Roc's nest in *Spellbreaker*. Also stuck in an Infocom game is Hans Heemskirk from The Hague. His problem is how to get the ticket from the library in *Enchanter*. He could always reach into the hole.

The Pawn is now beginning to cause difficulty for some adventurers. Maureen Barton wants to know how to stop being eaten by the Dragon and Paul Simms is slowly going berserk trying to get the Lumps in the mine. John Williams still cannot get past the boulder and Simon Bell wants to know the purpose of the plant pot.

Mandy James would appreciate help on the Level 9 *Adventure Quest*. In particular, what to do with the Skeleton hands which drag her to her death. Has she found a sword? If so, use it.

Paul Scott writes saying "I know this sounds daft but I cannot get past the coachman in *Dracula*." Has he tried tipping the coachman?

HELPFUL HINTS

Dracula
Can't find a mirror – Use the cloth to do some polishing.
Stuck in the Coach – Examine old woman's eyes.
The Pawn
Short of cash – look in the Fountain.
Snowman a problem – melt him with something warm; examine colours.
Adventure Quest
To get rid of Balrog – Smite Bridge with Sword.
Cave door stopping your progress; say "Open Sesame".
Dungeon Adventure
Throw items at the Willow Tree, then use axe.
Drop Poppy Seeds to foil the Siren.
The Boggit
To get past Trolls, say "Lux".
To get out of house, examine diary in the chest.
Trinity
To get to Long Water, climb into pram then open umbrella.
Examine bones in cemetery to find skeleton key.

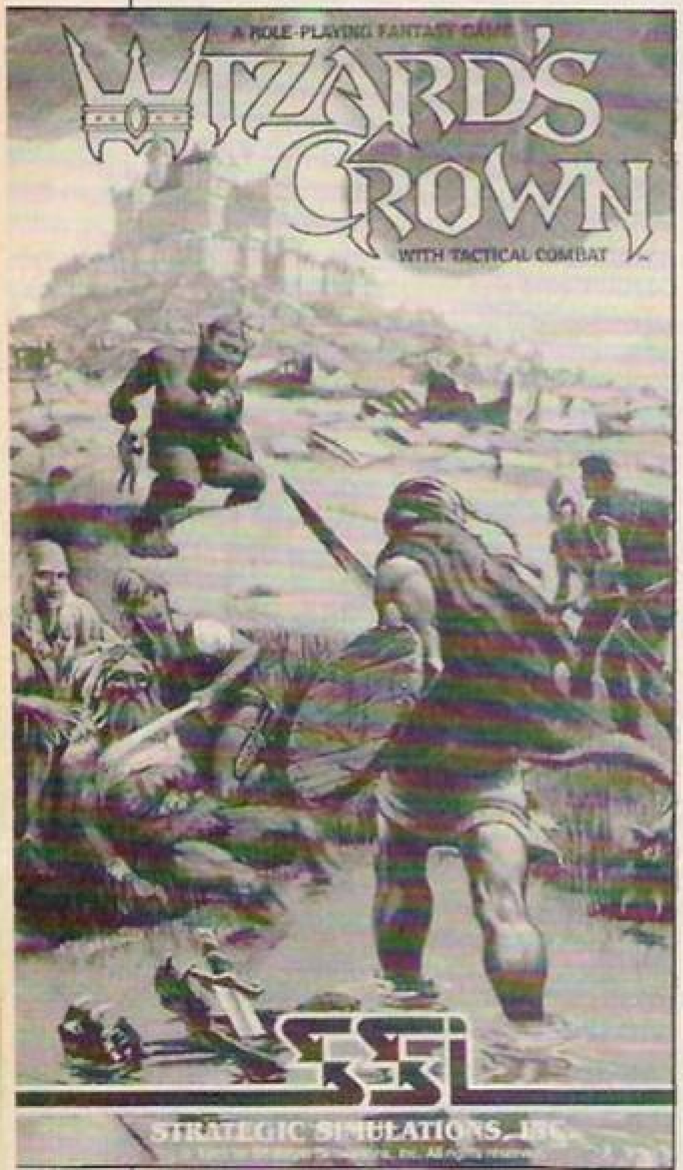
More readers are taking time to write to me. Remember if you want a personal reply send a SAE. Address all correspondence to Roger Garrett's Adventureline, c/o Your Computer, 79-80 Petty France, London SW1H 9ED.

Helpline Service

If you are in deep despair or cannot find that elusive key, help is only a telephone call away. The Adventureline Helpliners are Jackie on 061 339 0092 and Geoff on 0695 73141, available five days a week from 7pm to 9pm. My thanks this month to Mike Maule for his compilation of hints.

Last month's review of *Dracula* stated that it would be text-only but CRL in its wisdom has decided to include graphics; not any old type, but digitalised graphics. I cannot wait to see it.

WIZARD'S CROWN



- ► *CBM64/128/Atari/IBM PC*
- ● *U.S. Gold/SSI*
- ● *Role-playing adventure*
- ● *£15.20*

This month's RPG is another classic from Strategic Simulations. Unlike last month's RPG, *Crown* has everything for which the ardent RP gamester could wish. The overall playing area is not so big as for some games but what it lacks in size is compensated by the number of battles you need to undertake. This is no ordinary travel-the-land, meet-monster, kill-monster, get-gold type of game. It is an adventure full of twists, where commonsense and good strategy are the order of the day, or you will not last long because the game is first and foremost an excellent battle for survival.

Your mission is to find the missing Crown of The Emperor. It is no ordinary crown. Whoever holds it is able to draw from its wisdom and power. As usual, one old wizard decides to keep the Crown for his use. You have to find and return the Crown and fame and fortune are yours.

As with any RPG, your first task is to recruit various members for the journey. Take your time in this section – it will be worth it later. Once having selected or created your band, it is time to look round the city and while looking to kill a few thugs and thieves, save a damsel in distress and have a whale of a time in the local taverns.

The game moves at a fairly rapid pace. Battle confrontations are in two forms. You can choose Tactical or Quick Battle. Quick Battle is self-explanatory – the computer decides the outcome – whereas Tactical can last as long as 45 minutes and that is where your skill as a tactician is required.

During the battle you can check your band to discover the injuries incurred. The usual hit point system is used but instead of losing, say, three points after a hit the points are evaluated on severity of the blow and whether it is a 'bash' blow or a 'cut' blow. A 'bash' causes injury, which could be serious or normal; the 'cut' causes bleeding – a player will bleed to death if unattended, so it is vital to check and heal your player as soon as the battle is over.

GRAPHICS
● ● ●
ATMOSPHERE
● ● ●
PLAYABILITY
● ● ● ● ●
VALUE FOR MONEY
● ● ● ● ●
OVERALL
● ● ● ● ●

I enjoyed Crown immensely. My only criticism of an otherwise excellent game was the amount of times I had to re-visit the inn to rest my warriors, or progress is almost impossible. In saying that I do not think you will be disappointed in the overall playability and depth of gameplay awaiting you in the fantasy land of Arghan.

MOONMIST

- ► *Amiga/CBM64/Atari + Disc Drives*
- ● *Activision/Infocom*
- ● *Adventure*
- ● *£30*

Rounding the corner of the cliff road, the beams of my sports car illuminated the wrought iron gates which stood closed in front of me. Climbing quickly out of the car, I marched to the impressive gateway. A cold November mist was rolling in from the sea which seemed to eat into my bones. Pulling up the collar of my jacket I rang the bell. A mechanical-sounding voice asked the usual questions and then told me to enter.

Climbing back into the car I drove slowly along the narrow twisting drive towards Tresyllian Castle, thinking of the events of the last twelve hours. It was the letter from Tamara, a sweet and trusted old girl friend, which had taken me to the old Cornish castle. Someone or thing had tried to kill her and it was for me to try to find who and why, so after a long flight from the States there I was.

I could discern the castle, with its dark turrets reaching into the ever-darkening sky like cold, dark fingers. Somewhere inside was the object of my journey. Could it really be haunted? I had heard stories about so-called haunted houses but was the legend of the White Lady of Tresyllian Castle true, and was it really possible for a long-dead person to rise from the grave and try to kill another?

GRAPHICS
None
ATMOSPHERE
● ● ● ● ●
PLAYABILITY
● ● ● ● ●
VALUE FOR MONEY
● ● ● ● ●
OVERALL
● ● ● ● ●

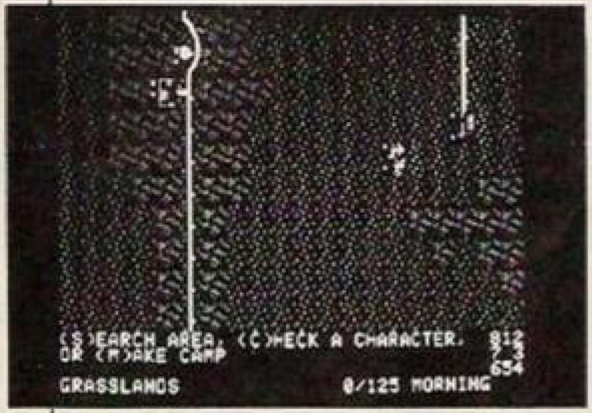
If you fancy a good detective mystery set in and around a rambling old castle inhabited by strange and mysterious characters, look no further, because Infocom has again delivered the goods. You will need all your detective skills to help you solve this one but beware while you explore the dungeons and secret passages which abound in this game because there is a particularly nasty ghost who is dying to see you in the same state.



Full of atmospheric text descriptions for which Infocom is famous, the tale twists and turns like a rollercoaster as you try to solve the strange happenings inside the castle. The objective is to save Tamara from a fate worst than death and at the same time solve various clues which eventually will lead to completion of the game. Do not linger too long in your quest or you will find a nasty surprise awaiting you.

HEART OF AFRICA

- ► *CBM64/Atari + Disc drive*
- ● *Ariolasoft*
- ● *Graphic/Arcade Adventure*
- ● *£14.95*



This, I suppose, is a mixture of graphic adventure mingled with RPG plus arcade. Ariolasoft must be congratulated for trying to please everyone but will the game do so?

I found it to be interesting, albeit in a funny kind of way. Your objective is to find the hidden tomb of an ancient Pharoah. Sitting alone drinking creme de menthe you are surprised by the arrival of a letter from Flattery, Frump, Flaghorne and Fagin, solicitors, explaining that you are the sole beneficiary in the will of your demented uncle. Before you can inherit there are one or two things you must do,

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PLAYABILITY
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VALUE FOR MONEY
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OVERALL
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like visiting the Dark Continent and finding the tomb. Along the way you may need to fight off a few cannibals, suffer dire thirst in the deserts, starve slowly to death and, in general, have a good time.

Your quest begins in Port Cairo, where you must visit the local stores to obtain the goods necessary for your journey. I found that part frustrating, mainly because of the method of visiting the stores. The way could have been made easier. First you are presented with an overall view of the town/village, represented by little boxes.

On entering a certain box you are given a close-up of the village. Each store is depicted by a different-shaped hut. By entering the hut and standing beside the character you find there you are able to buy your goods. What I found frustrating was if you wander outside the boundary of the village – and you discover that only when you have done so – you are once again presented with the overall view.

After doing that a few times, especially with the slowness of the CBM disc access, you become a little disenchanted. Having acquired the items needed you can start your journey. It can be done in a number of ways – by using a travel agent, walking or travelling by canoe.

Finding caches left along the way by your uncle will help you understand a little more about what you are doing but not much. The game is icon-driven, each icon giving a sub-menu of commands to use. The graphics, even though correct geographically, have a dated look. The main character looks like a pair of crab legs, which does not help much. If you can tolerate those shortcomings, after playing for a time the game becomes addictive and so the shortcomings do not seem so bad.

PASS TIMES IN TONETOWN

- ► *CBM64/128 + Disc Drive*
- ● *Activision*
- ● *Graphic Adventure*
- ● *£14.95*

From the company which produced the excellent *Borrowed Time*, the latest release is everything I would expect from one of the most innovative software houses. Tass is, to say the least, certainly different from some of the usual rehashed unoriginal adventures. Graphically superb and once again featuring either icon or keyboard control, your quest is to locate your old grandad and save him from

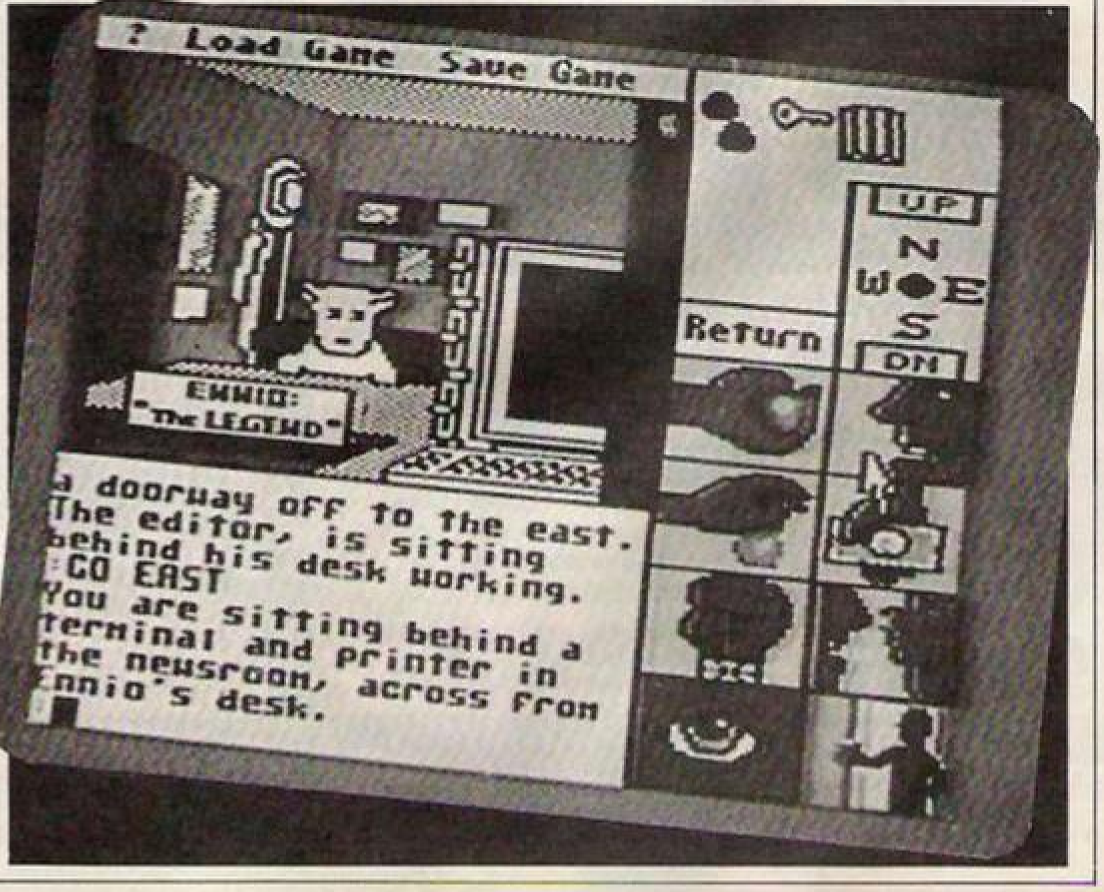
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the clutches of the rather nasty Franklin Snarl. At the same time you must also make sure Snarl does not get you.

The adventure is similar to countless others but Interplay, the author, has again produced a world in which strange and amazing characters help and hinder you in your quest. The game starts in your grandad's old winter hut. A half-eaten pizza lies on the dusty table. That is unusual because gramp loves his pizzas. Finding a laboratory, you pull the switch to activate the time warp hoop and are transported instantly to the strange dimension in which Tonetown exists.

Surviving in Tonetown is not easy but one source of help is Enio the Legend, who used to be gramp's dog Spot – but now he can talk. Among the unusual inhabitants you will meet are such enlightening folk as Chaz, who does a two-tone hair job; Fast Freddy, whose Globurgers are the talk of the Tone; and The Daglets.

The packaging includes an information booklet and also the Tonetown Times, which provides some clues to help you in your quest. The game includes Quickload and Quicksave, a boon to any adventurer, and the parser is fast to respond to its large vocabulary. Overall an excellent adventure guaranteed to please.





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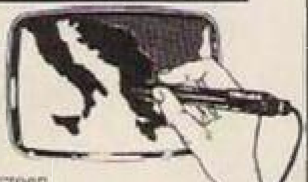
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Two more drummers join the Commodore band

Tony Sacks tells us what is new. If you want to know HOW it is done, read on . . .



Drum simulators for the Commodore 64/128 are multiplying at an alarming rate. In the dim distant days of 1985, the trail-blazing Tron *Digidrum* had the market to itself. It was joined recently by the Datel *ComDrum* and now there are two new arrivals, *Polydrums* from Music Sales and *Rhythm King* from Supersoft.

Polydrums is a software-only package designed to run on Commodore Sound Sampler hardware. As with others of its ilk, it stores digital recordings of percussive sounds in the micro memory and plucks them out and plays them back at staggering intervals to produce the effect of a kit of instruments being pounded.

Polydrums has three eight-instrument kits of sounds – natural, electronic and Latin – the last being the most impressive. As with most other drum machines, rhythm patterns can be specified and edited on an instrument-versus-beat grid or tapped-out on the QWERTY keyboard in real-time. Any four instruments can sound simultaneously. The program provides 26 pre-defined patterns which can be combined with your efforts to produce a string of patterns, called collectively a song.

Posterity

Up to 245 patterns can be strung together to give many minutes, possibly hours, of rhythmic variation, provided you have the stamina to listen.

What distinguishes Polydrums from its rivals is the ability to include user-generated sounds in its patterns. You simply clap, burp or feed some other short-lived sound into the microphone which accompanies the Sampler package and that sound replaces one of the pre-recorded sounds in the kits. If you wish, you can create a complete new kit in that way. User-sampling certainly adds to the fun of using a drum machine and can produce some interesting and amusing effects which can be stored for posterity.

At £19.99, the Polydrums kit is essential for any Sound Sampler owner but it faces stiff competition from the other new arrival, the Supersoft Rhythm King, which will also run on the Sound Sampler hardware or, it is claimed, on any of the other sampler/drum machine hardware packages on the market. Supersoft is supplying the Rhythm King either as a £19.95 software-only package or together with a cigarette-pack-sized decoding module at £39.95.

Much thought has obviously gone into Rhythm King. Its displays are better-designed than its rivals and almost any facility you might want from a drum simulator has been built-in.

The software provides two eight-instrument kits of sounds; some have a pleasing reverberative sound, others are flat by comparison. Supersoft plans to provide more sets of sounds at about £3 per set.

Rhythm King has many sensible points, including colour-coded displays of the beats in a bar. When editing you can jump from any beat in one bar to the same beat in the next, which is most useful. The care which has gone into the software also shows in the instruction manual, which is more detailed than those of its competitors.

Supersoft has almost tried too hard. In addition to naming each sound and giving the number of the QWERTY key which has to be pressed to play it, there is also a graphical representation – or icon – of the instrument. That can be confusing, especially on the editing screen where you have to refer from the name to the icon and then to the number before knowing which key to press.

The arrival of the two new packages makes choosing a drum simulator for the Commodore 64/128 extremely difficult. Each contender has its strengths and weaknesses. The original Tron Digidrum package, for example, offers by far the largest library of sampled sounds but with time, its newer rivals could catch up. At £79.99, the Digidrum is the most expensive of the drum machines.

Sound sampler

Users of the Polydrums package will not have to wait for new sets of pre-recorded sounds because they can create their own samples. To do so they must own the £69.99 Sound Sampler package in addition to the drum software.

The Datel ComDrum is, at £29.99, the cheapest stand-alone drum simulator but it is also the least versatile of the packages.

Rhythm King is the most flexible and best-designed of the bunch but it lacks the fun element of the Polydrums user sampling. It is a difficult choice which may, in the end, be decided by the survival of the noisiest.

Addresses

Datel – Unit 8/9, Densbury Road, Fenton Industrial Estate, Stoke-on-Trent.

Supersoft, Winchester House, Canning Road, Harrow, Middlesex.

Subject –

Xerox Documenter – dream or reality?

In the past being a publisher was the privileged position of a few. Now by being in possession of only a relatively small fortune the budding entrepreneur can take his chances. Geof Wheelwright describes the latest offering from Rank Xerox.

Before you consider this month's dream machine, you will have to learn a few facts of life. Do you, for example, know from where WIMPS – Windows, Icons, Mouse and Pointer Systems – emanate? You probably saw them first on the Apple Macintosh, where they were employed to provide the picture-driven interface and mouse control which provided most people with an idea of what their first dream machine looked like. You would, however, not be correct to think that they came from Apple.

Most of the work on WIMPS originated at Xerox, which has a highly-regarded research facility in California known as Xerox Parc. It was from that research facility that the first well-known WIMPS machine, the Xerox Star, emerged. It was followed later by the Apple implementation of those ideas on the Apple Lisa and then the Macintosh.

So it may be that Xerox originated the WIMPS ideas but surely it was Apple which first leapt into the whole desk-top publishing business. Wrong, again. Xerox – or Rank Xerox Ltd, to call the company by its proper corporate name – has been involved in terminal-based publishing systems for some years and only a few months ago announced its latest desk-top publishing system, *Xerox Documenter*, which includes both desk-top publishing hardware and software and is the subject of this month's dream machine reveries.

To look at, the system is a good deal more substantial than the Apple Macintosh-based desk-top publishing system but is nowhere near the sprawling hulk which made up the massive Cray supercomputer at which we looked in the previous issue.

The system allows input of text and graphics from a variety of sources, including discs in IBM PC format, and uses a page-by-page WYSIWYG – What You See Is What You Get – system in conjunction with a laser printer.

There are a number of components to desk-top publishing with the Xerox equipment, including the Xerox 6085 multi-function workstation – a massive 19in. high-resolution monochrome screen, PC-style keyboard and mouse input systems, along with 10, 20 or 40MB of hard disc storage – and the Xerox 4045 desk-top laser printer, which offers a resolution of 300 dots per inch and can double as a photocopier.

The bundled integrated software, which Xerox calls Viewpoint, employs the same desk-top metaphor with re-sizing boxes, scroll bars and pull-down menus with which you will be familiar from the Apple Mac, the Atari ST and, more recently, the Commodore Amiga.

Also like the other WIMP products, the Xerox system uses the concepts of on-screen folders within folders – the icon equivalent of directories and sub-directories – icons for various types of documents and high-resolution, on-screen representations of different typefaces and graphic densities.

To all intents and purposes, the machine looks like an odd cross between the Mac and the PC, with a PC-style keyboard which comprises function keys, standard QWERTY keyboard and several specialised keys. Beside the keyboard is a



Xerox Documenter – a self-contained office publishing system.

standard two-button mouse, unlike the uni-button offering on the Apple machines, with a sufficiently long lead that you do not find yourself struggling to decide exactly where the mouse will be positioned.

Unlike the PC or the Mac, Documenter has been designed from the beginning as a true multi-tasking machine. Although its primary purpose is obviously for desk-top publishing, it also includes a hardware/software PC option which allows you to run almost any IBM PC software in a window on the desk-top at the same time as you are also running the Documenter Viewpoint integrated software. That IBM emulation does not just run to easy MS-DOS applications but also promises to allow you to run well-known, 'badly-behaved' software such as *Lotus 1-2-3*.

Page by page

It is, of course, the desk-top publishing applications where Documenter really scores. Unlike existing desk-top publishing applications for the IBM PC and the Macintosh, which are designed for taking existing word-processed text and formatting it page-by-page, the Documenter Viewpoint software incorporates word processing, business graphics, spreadsheet, list management and freehand drawing applications.

That means that unless you want to import existing PC text or graphics there is no reason why whole publications cannot be undertaken solely via the Viewpoint software.

The word processing is in the mould of *MacWrite* or *First Word* and allows for a wide range of paragraph and page layouts to be created, with numerous fonts and typestyles. The system software also supports writing in a variety of languages, including options for Chinese and Japanese, so that a single document can contain the necessary characters to be written in, for example, English, French, German, Chinese and Japanese.

Xerox obviously has its own ideas about the use and importance of its new publishing system, and U.K. marketing manager Alan Higson is vocal about them. "Office systems which address document publishing need to provide solutions which effectively combine the creation, or capture, of the document content with composition, editing, storage, retrieval, printing and distribution," he said.

Coherent solution

"Rank Xerox has well-established strengths in workstations, electronic printing, facsimile and networks, as well as our reprographics capabilities," adds Higson. "We are committed to international standards and compatibility with other leading systems vendors. We believe we are in a position, therefore, to work with our customers to evolve a coherent and integrated solution to their document-processing needs in both printed and electronic form."

It is clear that Xerox wants you to know it plans to be top dog in this area and that it does not intend Apple, IBM or anyone else to spoil this scheme.

Where, you may well ask, is the catch in all this? The first catch for the small business will be the price. Like all dream machines price is initially no object, as it costs nothing to dream, but in the case of Documenter you would find yourself with a bill of at least £7,500, rising to £12,000 depending on the configuration you want.

It is not really so expensive as you might think, especially when you consider that an Apple Macintosh Plus, with hard disc, desk-top publishing software, word processing application and laser printer would cost a comparable amount. The Apple system does not allow the laser printer to double as a photocopier, nor does it offer the same type of IBM PC emulation options.

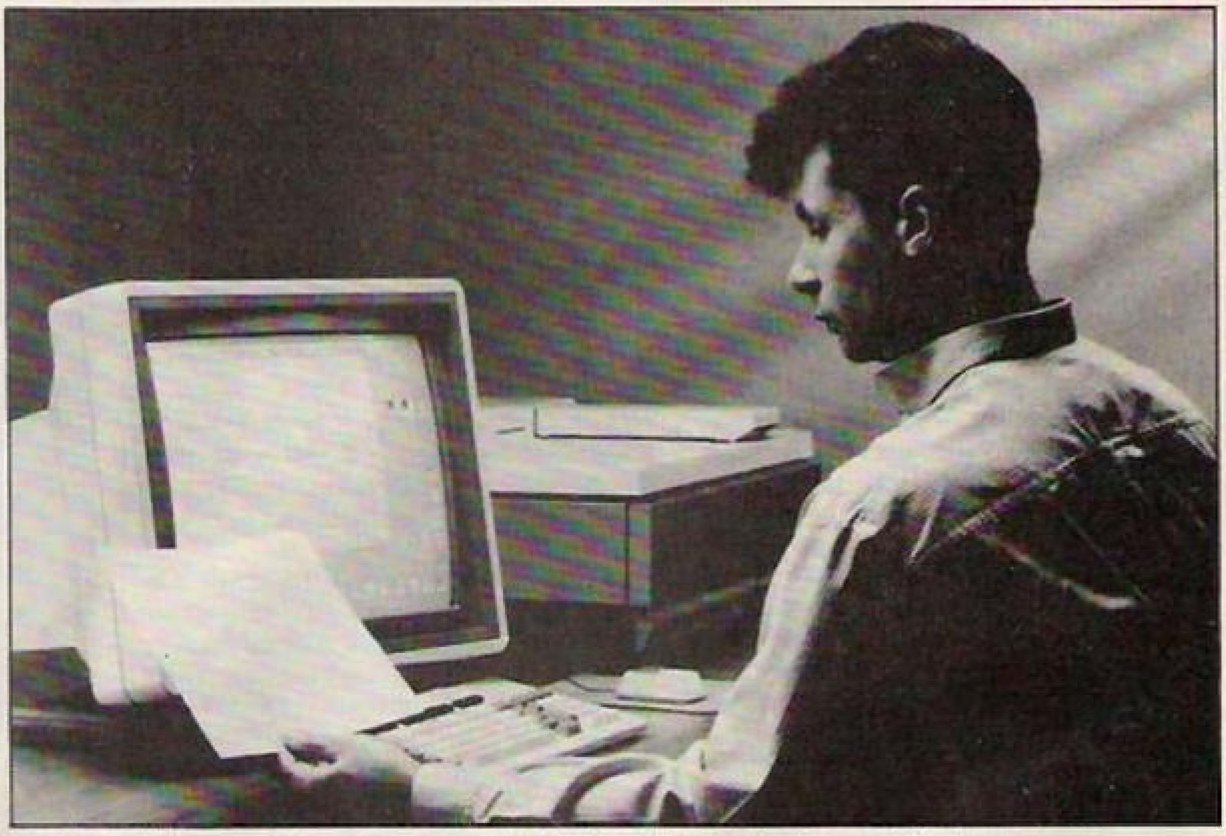
The IBM AT, of course, is good at emulating the IBM PC but once it is kitted-out with the desk-top publishing add-ons needed to take it to the kind of specification offered on the Xerox system, it would cost the same or even more.

That price becomes even more attractive when you consider how well Xerox has integrated the Documenter with a networking system so that a single laser printer can be shared between multiple workstations or over an industry-standard Ethernet network. The system even allows you to access a mainframe in one window while running a spreadsheet in a second and perhaps a word-processed document in a third.

All in all, the Xerox Documenter must be one of the more pleasant dreams I have had since this column began. As a journalist, anything which involves reducing the cost of publishing to where you do not have to bother with editors, publishers and all those nasty typesetting costs must be attractive. When it is as easy to use as Documenter, it is also very tempting.

I worry, however, that this obsession for desk-top publishing might be disenchanting to the rest of the world. There have been suggestions that the only reason DTP is receiving so much attention is because journalists, and not readers, are excited about the possibilities it presents.

We all know that is not true, don't we? Who would not give the odd £7,500 for the chance to become a publishing tycoon? Now, if I could only find the £7,500.



It carries-out document creation-composition and printing for business applications.

INFORMATION
Rank Xerox (U.K.) Ltd.
Bridge House, Uxbridge, Middlesex.
Tel: 0895 51133 extn. 3131
Launched November, 1986.

Fleet Street Editor

Low-cost PC hardware, most notably in the form of the Amstrad PC1512, combined with the Mirrorsoft Fleet Street Editor package, bring the cost of desk-top publishing within the reach of any aspiring publisher.

Desk-top publishing, or DTP as it is referred to by those in the know, is one of the current buzz words of the computer world. DTP is rather a grand way of referring to systems which allow the creation and printing of documents owing more in appearance to a typical magazine page than the rather bland-looking pages produced by a typical word processor.

DTP software allows columns of text to be laid out on a page, headlines and captions to be positioned, graphics and line drawings to be included in a document – all the functions associated with the traditional skills of magazine layout. Mirrorsoft has recently launched two DTP packages, though it has experience with DTP software as it has been marketing a package for the BBC micro for some time. The two new DTP packages are written for the IBM PC or compatibles and for the Amstrad PCW. It is the PC version of that we evaluate for this review.

Fleet Street Editor is supplied as a set of four discs. Two system discs, the difference between them being the screen driver supplied, either IBM colour or Hercules. The other discs contain the fonts – typefaces – supported by FSE and a collection of line drawings and illustrations which may be included in FSE documents.

Keyboard

We used the package in conjunction with two PC clone systems, one a dual floppy system, the minimum system requirements, the other being a hard disc-based system. Both featured 512K of RAM, again a minimum requirement. FSE may be used in conjunction with a mouse or, slightly less effectively, controlled via the keyboard.

We used the software with a mouse for a brief period but the remainder of this review assumes that the software is used with a hard disc system and is controlled via the keyboard. The main advantage of using FSE with a hard disc is that the software is faster in operation and that there is no need to swap between system and data discs, as is the case when it is used with a floppy system.

Before entering FSE from the MS-DOS prompt it is important to ensure that the path in which the system files have been installed is the active path. If FSE is to be controlled via the keyboard it is also necessary to issue the command NO-MOUSE before calling the main software.

Typing FSE at that stage will call a batch file which will load the PUBLISH.COM file and the appropriate overlay files into RAM. After a short delay a copyright message appears on-screen. That gives way shortly to the main menu screen shown in figure one.

In keeping with current trends, the software is controlled via a series of pull-down menus, selected by the function keys, and a set of icons, again selected by a function key.

When using a package such as FSE it is easy to lose sight of the fact that, while effective presentation of a document is important, the words used are vital if any publication is to communicate its message effectively. While FSE builds in a basic text processor, the most efficient way to use the system is to create the words as an ASCII text file, using a full-feature word processor such as *WordStar*.

Column width

Having created a document containing the words to appear on the final page, the next step should be to prepare and position any graphics to be included as part of the final page. The FSE package includes generous general-purpose artwork supplied on disc but the user is able to create basic drawings using the artwork editor. Alternatively, artwork may be prepared using a specialised graphics package and those images converted into a form suitable for inclusion in FSE pages.

Another important decision to be taken before text is imported into the FSE document is the column width in which the text is to appear. FSE supports column widths of either one, two, three or four columns. Careful consideration to the layout of text columns is necessary if a document is to have an acceptable appearance.

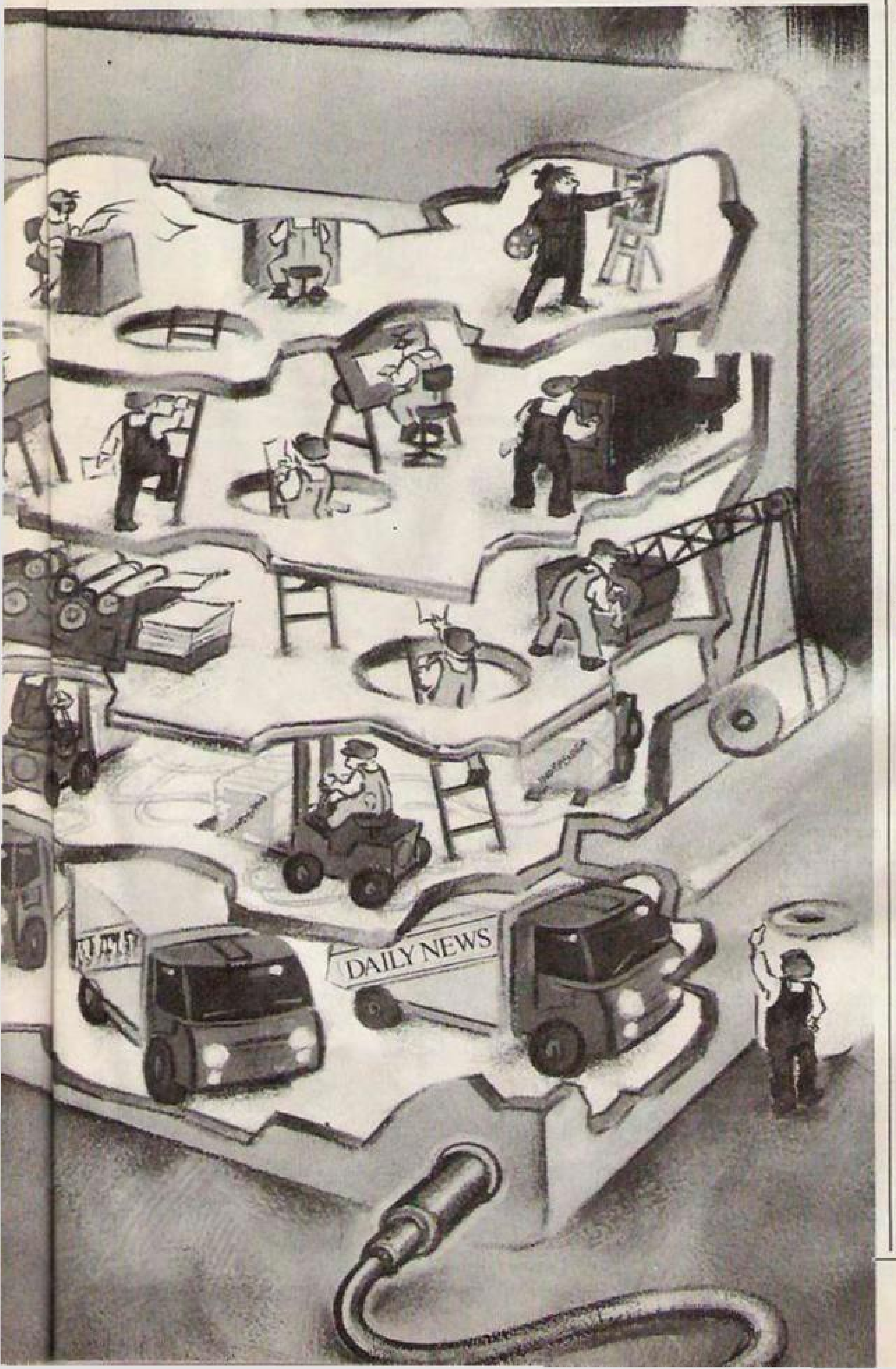


The software is controlled via a series of pull-down menus selected by the function keys, and a set of icons, again selected by the function key.

FSE allows text to be justified, centred or to be ranged either right or left. Selecting the justify option with either three- or four-column text can lead to problems, as FSE does not feature a hyphenation algorithm; instead, it will pad out lines with spaces. That can result in some lines containing an excessive number of spaces and lead to a ragged layout. Intelligent hyphenation, though, is an option only considerably more expensive DTP packages would provide.

When preparing a page, FSE provides a window on to the page. To view the completed page, a low-resolution, show-page option available from the f1 menu can be used. It is wise to check the layout of a page in that way before committing anything to the printed page.

The text imported into an FSE layout may be displayed in a number of type styles – fonts – and may appear in a range of type sizes to give the proper emphasis to headlines, introductions and captions. The leading – the gap between the lines in the main body of the text – may also be adjusted.



An option known as picture wrap allows the text to be run round any graphics positioned on the page. Use of this feature gives FSE layouts a professional quality.

In addition to those features, FSE builds in many other commands which give the computer-aided layout a considerable degree of control over the way a document will look when printed-out. While professional typesetting systems offer far more sophistication, for its budget price FSE builds in an impressive array of features.

FSE supports a number of printers, including, with an appropriate driver package, laser printers. When printing-out using a dot matrix printer the quality of the output is acceptable, although nobody would confuse a page for one produced by a professional typesetter.

Professional

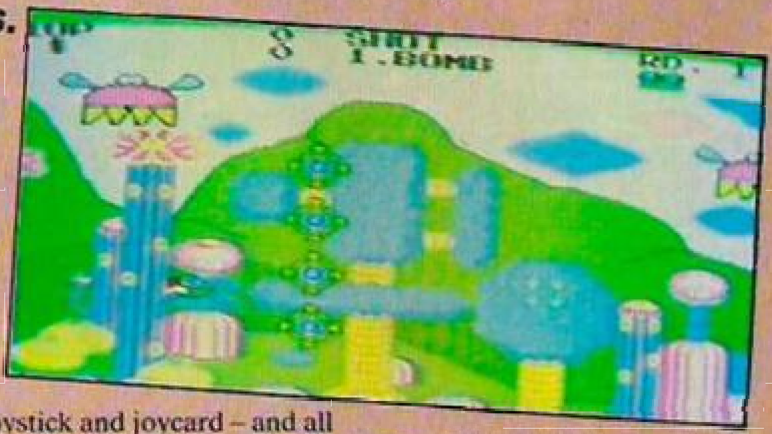
When a laser printer is used, however, the quality of the page can approach that produced by equipment costing many thousands of pounds. FSE can print documents, not to a printer but to a disc file. That option is useful if, for example, a document is prepared at one location but is to be printed at another computer which has a higher-quality printer available. The disc with the printable file can be loaded into any machine and the document printed with the MS-DOS PRINT command.

FSE will appeal to many people who at present use scissors and paste to produce a variety of newsletters and small-scale publications. Even when used with a dot matrix printer, the quality of a finished document will be an improvement on the cut-and-paste approach. If a laser printer is available, FSE can product results approaching professional quality. While FSE lacks some of the sophisticated features of high-cost DTP packages, at £150 it offers a surprisingly sophisticated product which will appeal to many PC users.

INFORMATION
Fleet Street Editor – IBM PC version
Price: £149.95
Mirrorsoft, 74 Worship Street, London EC2 2EN.
Telephone: 01-377 0022
Fleet Street Publisher also available for the Amstrad PCW8256 and 8512. Price £69.95.

Seeing is believing

Would you spend £100 on a machine designed only to play games? Ariolasoft hopes you will as it releases the Sega Master System on an unprepared world. Francis Jago reports.



War has been declared – just like the war between Commodore and Sinclair three years ago. This time, however, the



three sides are much more diverse and the battle might be more fierce.

Let us start at the bottom. Atari – yes, the company responsible for the ST – is set to release, for slightly less than £75, its entry into the cheap dedicated games machine market. With graphics and sound far superior to the early VCs, it hopes price advantage will allow it to clean up.



At the top of the ladder is the Nintendo games console, soon to be imported by Mattel. Having played with the machine extensively, I can vouch for its quality, and some of the games, especially *Nemesis* and *VS Super Mario Bros*, are outstanding and certainly worthy of the tag of an arcade machine at home.

In the middle, and the one about which I am going to write in more detail, is the Sega Master System, imported to the U.K. and Europe by Ariolasoft. Costing £99.95 inclusive of VAT, and with games, whether on cartridge or Sega Cards, priced at £19.95, it manages to be cheaper than the Nintendo in every department.

Anyone who has spent time wandering in the arcades will have noticed some games created by Sega. With hits such as *Hang On*, *Enduro Racer* and *Out Run*, it is one of the most prolific and successful arcade machine manufacturers in the world. What it hopes for is a new market, one which can exploit the success of the arcade machines, yet possibly have a longer life.

For your money, you will receive the console, two controller cards – which seem to be an uneasy combination of joystick and joycard – and all the necessary leads to connect it to your television set. Also included is a 256K TransBot Sega Card. The processor used in the machine is a Z-80A running at a clock speed of 3.6MHz which is used to control the 128K of RAM.

The machine can display up to 64 colours, of which only 32 can be on-screen at once.



Resolution is high enough at 256 x 192 dots and the overall effect is very impressive.

As you would expect with such a machine, the screen can be scrolled in almost any direction and the sound effects are realistic, if not exceptional. As with all of the new generation of dedicated games machines, the Sega will live or die on the quality of the software released for it. The first crop is, to say the least, mixed, with some excellent games and some very poor conversions.

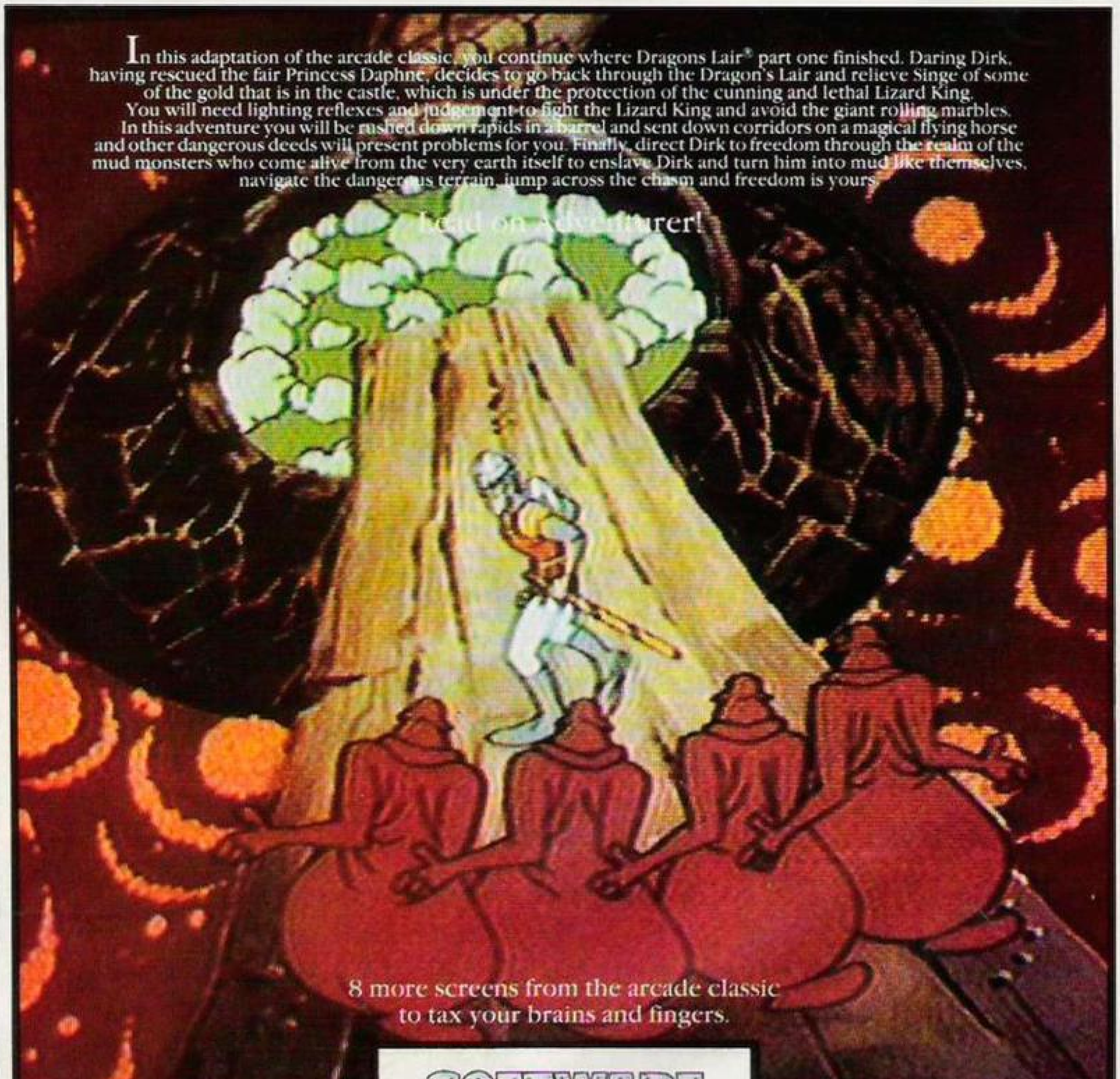
Apart from *TransBot*, seven other games will be available immediately after the launch, to include *Black Belt, Fantasy Zone, World Grand Prix, Choplifter, Action Fighter, Astro Warrior/Pit Pot,* and *Hang On.*

If the Sega is supported by a variety of software houses and new releases are not in short supply, then it is priced for success. The only doubt at the moment seems to be that the Nintendo has attracted more attention.

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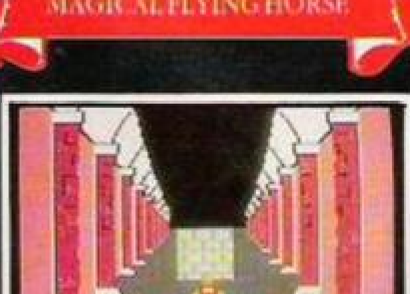
PART II

Escape From Singe's Castle

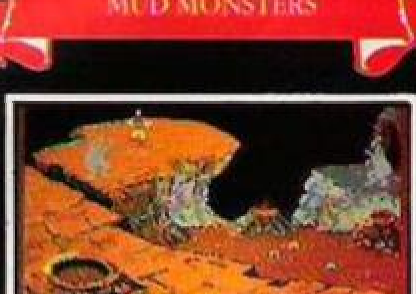


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Year's best – 1986

Looking back at 1986 it becomes obvious just what an exciting and innovational a year it was. In this feature* Your Computer *reminisces on what products made it a year to remember.

CATEGORY:
Simulation
WINNER:
TT Racer
SOFTWARE HOUSE:
Digital Integration

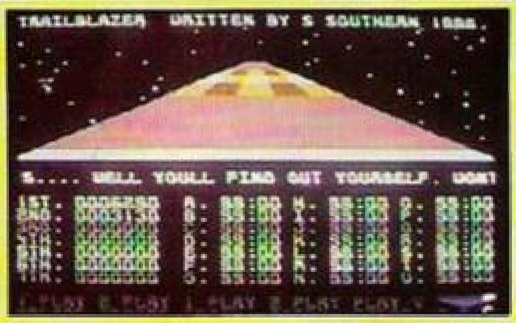


There will probably be some controversy about this decision but, with all due respect, *TT Racer* was the clear winner of this category. Having seen and played simulations from all the top software houses, we returned again and again to it and that is the highest recommendation possible.

Everything about the game reflected the care and skill with which it was programmed and the ability to network eight Spectrums added greatly to the innovational nature of the game. Rod Swift, the programmer, can be justly proud of the game and the only thing left to say is roll on the Amstrad version.

CATEGORY:
Arcade game
WINNER:
Trailblazer
SOFTWARE HOUSE:
Gremlin Graphics

It was getting very late in the year for this game to win this award but we feel, hav-

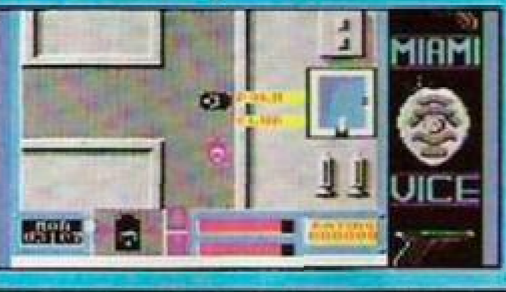


ing played the game at great length, that its innovation, gameplay and excellent graphics make it a worthy winner. Gremlin Graphics had an excellent year and games such as *Way of the Tiger* and *Jack the Nipper* have now established it as one of the top five software houses in the U.K. If it continues to produce games as good as these, 1987 could well be its year.



CATEGORY:
Game soundtrack
WINNER:
Sanxion/Miami Vice
SOFTWARE HOUSE:
Thalamus/Ocean

The only shared honours, as no-one could decide which soundtrack was better. The general opinion was that the rendition of the *Miami Vice* theme tune produced by Martin Galway suited the game more but that the Rob Hubbard-produced rendition of Prokofiev's Romeo and Juliet was more impressive. Either way, they both emphasised the importance of music in games.



CATEGORY:
Adventure game
WINNER:
The Pawn
SOFTWARE HOUSE:
Rainbird



What can one say about this game? Released initially on the Atari ST, it combined a sophisticated parser with the most impressive still graphics seen on a home computer. Even only in ST format, the game was appreciated by everyone who saw it but the Commodore 64 version was in many ways more stunning.

Everyone expected the 64 version to be massively cut down, with poor graphics and restricted gameplay. That could not have been further from the truth. Bob Stevenson produced the best still graphics yet seen on the Commodore and Magnetic Scrolls did the rest, with stunning result. In many ways it was the easiest category to choose, because nothing really approached *The Pawn* closely.

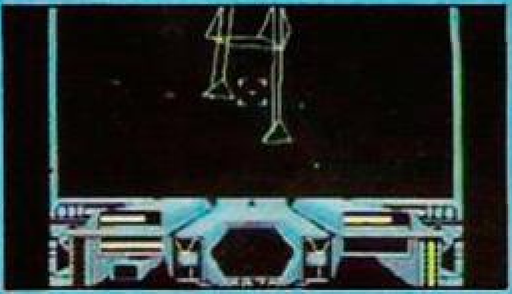
CATEGORY:
Arcade adventure
WINNER:
Antiriad
SOFTWARE HOUSE:
Palace Software



Stunning graphics, excellent music, good gameplay, annoyingly addictive, and a free cartoon book, too. What more could anyone ask for? With this game, Palace established itself as an absolute master of the art of good arcade adventures. *Cauldron* and *Cauldron II* may have been good – and, in fact, Cauldron II was the leading contender for this award if *Antiriad* had not appeared – but Antiriad was out of this world.

Dan Malone, the artist responsible both for the comic strip and the computer graphics, has created something really special. Palace says there are more games in the pipeline.

CATEGORY:
Most innovative
WINNER:
Starglider
SOFTWARE HOUSE:
Rainbird

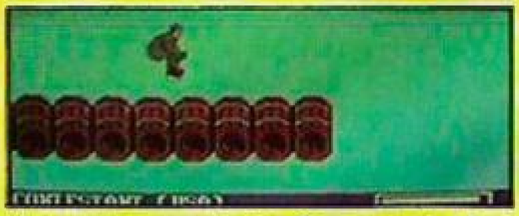


Released initially on the Atari ST and programmed by Jeremy San, this game really pioneered the ST as a games machine and has yet to be bettered in terms of playability and innovation. Released recently on the Amstrad and Spectrum, it is the first Spectrum game to feature animated 3D vector graphics creations. What surprised everyone, even Rainbird, was the speed and quality of the conversions and, together with the original game, it will go a long way to establishing Rainbird.

CATEGORY:
Utility
WINNER:
Fleet Street Editor
SOFTWARE HOUSE:
Mirrorsoft

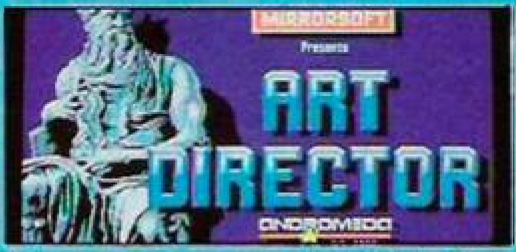
Already a hit with users of the BBC range of computers, now that *Fleet Street Editor* is available for the PC a new group of people will be able to experience basic desk-top publishing at its best. When used with a laser printer, the results are outstanding and can approach professional quality. Even with a dot matrix, the quality is a great deal better than many of the home-produced efforts which seem to be so popular.

CATEGORY:
Overall
WINNER:
World Games
SOFTWARE HOUSE:
Epyx/U.S. Gold



Yet again a game in the Games series has scooped the award. With eight events from round the world, including such novel ideas as barrel rolling, Sumo wrestling and caber tossing, together with some of the best graphics and sound on the Commodore 64, the game is the best yet to be imported from the U.S. and whether or not you are a fan of sports simulations, this is the game of 1986. The inevitable conversions for the Spectrum and Amstrad should enable *World Games* to continue selling well into 1987.

CATEGORY:
Graphics Package
WINNER:
Art Director
SOFTWARE HOUSE:
Mirrorsoft



When the Amiga was launched, Electronic Arts, a U.S. company, released *Deluxe Paint*, intended to show just what could be done with a machine of this power. Until recently, however, there was nothing of this standard available for the Atari ST. With *Art Director*, Mirrorsoft has really shown what can be done.

Using the program is exceptionally simple and immediately it becomes obvious how powerful a package it is. In many ways, *Art Director* is comparable with Deluxe Paint and there cannot be higher praise.

CATEGORY:
Computer of the Year
WINNER:
Amstrad PC1512

There may be other clones but none will have the impact of this machine. Starting at around £450, with a basic specification for which IBM would be charging more than £1,200, the Amstrad PC can truly claim to be the machine which turned the PC clone into a home computer.

Whether or not the rumoured problems are more than gossip is yet to be proved. What is sure, however, is that 1986 certainly was the year of the Amstrad and it would be a brave man who would predict the end of the seemingly permanent Amstrad increase in sales and profit.



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YEAR'S BEST 1986 CONT.

CATEGORY: Gadget of the Year
WINNER: Psion Organiser II



Anyone who had used the original Organiser would never have believed that the same company could produce something so useful and well-engineered as Organiser II. Fast growing to be the next generation Filofax, and gaining popularity with BMW-driving stockbrokers, this pocket computer has the power to act as a mini terminal, although most people see it only as a glorified address book. With new software being produced all the time, the machine looks set for a rosy future.



CATEGORY: Peripheral of the Year
WINNER: Thingi



If the simplest ideas are best, then this award will be no surprise to anyone. One small piece of twisted plastic, two strips of Velcro and a great idea made this copy-holder a firm favourite with anyone who has to read while typing. Priced as they are at £6.99, it is not surprising that the company seems to have no difficulty in selling the product, especially considering more bulky objects to do the same job start at considerably more than £20.

CATEGORY: Joystick
WINNER: Speed King

It may be odd to look at but once it is in your hand and you start using it the Speed King shines, whether you are using it for accurate CAD or blasting the latest aliens. With a left-handed model on the way, and more plans for innovational releases, Konix has established itself as one of the premier joystick manufacturers. If the *Your Computer* offices are a criterion, the Konix is the best joystick available at the moment.

CATEGORY: Personality
WINNER: Alan Sugar

Alan Sugar is surely the only man who was even competing for this award. The year began with the launch of the PCW 8512, which further established the machine as the only computer to consider if writing was your main requirement. The purchase of Sinclair, for the much-publicised price of £5 million,



established him as the top dog of home computing and the subsequent launch of a much revamped Spectrum 128, called the 128+2, showed that he knew what to do.

The master stroke, however, was saved until later in the year when he released, as surely everyone in the U.K. must now know, the Amstrad PC. Sugar does not claim to be an innovator by nature but with the PC he has made IBM sit up and take notice and, with record profits, 1986 was surely his year.

CATEGORY: Software House
WINNER: Hewson



It may have dropped the Consultants from the name but everything else has remained the same. Undoubtedly the most consistent software house, with a string of hits of which U.S. Gold would be proud, Hewson has established itself as one of the few software houses where you really can buy a game without having any thoughts of disappointment. To list all its hits of 1986 would take too much space but *Uridium*, *Quazatron*, *Pyracurse*, *Iridis Alpha* and *Firelord* to name five should indicate the overall quality of 1986.

With a team of programmers which includes Steve Turner, Andrew Braybrook and now Steve Crow, it can be assured of equal success in 1987, a fact which must make Andrew Hewson very proud.

Continuing from last month, Stephen Applebaum sees how you can animate art on this powerful Atari.

Filming with the ST



Film director is a program designed to aid in the generation of animated films. Its mode of operation is in many ways similar to that followed by professional animators, in that films are built as a sequence of individual frames. To create the illusion of movement, characters are drawn in a series of positions rather like in a child's flick-book. They are then linked in logical order so that stepping through them quickly produces the illusion of movement.

Creating a film using *Film Director* is a complicated process, too involved to be described in full. What follows is therefore an overview of the steps which have to be gone through to make a film, with some of the more note-worthy features of the program indicated where necessary.

Film-making always starts in the Pattern Editor, where pictures can be selected from pre-programmed picture files for use either as foreground or background elements. An extensive array of detailed pictures is available, though new ones can be drawn using a simple design program in Film Director.

The Pattern Editor uses a toolbox similar in function to the one described in *Art Director;* it, too, can be slid across the screen and toggled on/off with the f10 key. Included in the toolbox is a pen and a zoom function, the tools forming the Film Director so-called drawing package. For more professional designs, you can transfer pictures painted with Art Director or *Neochrome,* using the Film Director file conversion program.

Polygons are created in a separate editor, where shapes comprising up to 64 straight lines can be defined. One of the most powerful features of the Polygon Editor, and indeed many of the others, is something called TWEEN. It generates the in-between stages between two polygons.

If in one frame you draw a triangle and in the next a square, using the TWEEN function will generate a series of polygons automatically showing the gradual metamorphosis from one figure to another. The number of polygons generated by the computer can be anything from one to 99; obviously the greater the number of in-between stages, the smoother and slower the animation.

When a number of patterns and polygons have been defined, they can all be collected into a single unit via the Film Director Group Editor. An element residing in a group then becomes known as a fragment. Rather like sprites, fragments can have their priorities changed so that they either overlap or are

overlapped by other fragments.

When all the elements of the film have been defined, they can finally all be brought together in the Frame Editor. That is where the real task of animating all the fragments begins.

Each frame can contain up to 64 objects. Again, fragments, no matter how complex they are, can be TWEENed, so eliminating most of the hassles of changing the positions of fragments between frames. When all the individual frames have been set-up, they can be sequenced and the film eventually run.

Films made with Art Director can contain sequences of up to 2,000 frames and be output to a video recorder. To do that, you will need to contact Mirrorsoft for details about a special adaptor to provide the link between an ST and a VCR.

Art Director and Film Director are two of the most impressive design programs I have seen on any computer. If you are wavering between buying an Amiga or an Atari ST, I would advise you to look at the two dynamic packages. For me they are sufficient to warrant choosing an Atari over an Amiga, which, after seeing what is available for the latter, is not something I would normally suggest.

Information
Mirrorsoft Ltd,
Maxwell House,
74 Worship Street,
London EC2A 2EN.



For the COMMODORE, AMSTRAD, BBC MICRO, ELECTRON

REPTON 3

THE ULTIMATE CHALLENGE



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The Character Editor.

Being pursued by a Monster

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The Poisonous Fungus grows insidiously

Collecting a Golden Crown

Are you ready for the ultimate challenge?

Our original Repton game was immediately acclaimed as a refreshingly new concept: a game requiring dexterity to complete its arcade-style elements, and clear logical thinking to solve its strategic puzzles. Repton involves retrieving treasure from cleverly-constructed traps of falling rocks whilst avoiding the fearsome monsters and haunting spirits. "This is an astounding game reaching new heights in BBC arcade adventures," enthused the Micro User magazine.

Last Christmas saw the release of Repton 2, larger and much more challenging than before. Acorn User's Technical Editor Bruce Smith wrote: "Repton 2 is better than anything I've played on the BBC Micro or Electron. Brilliant!"

Now, completely rewritten and improved for the Commodore, Amstrad, BBC Micro and Electron, we proudly present Repton 3. For the first time, a screen-designer is included: try to devise screens that will perplex your friends, then see if you can solve their newly-designed screens. Another innovation is the character-designer which enables you to design your own monsters, rocks, eggs, spirits, diamonds . . . any or all of the game's characters can be redefined as you wish.

Repton 3 is much larger than its predecessors — it has 24 fascinating screens, and players who are skilful enough to complete them all can enter our prize competition described below. All the favourite Repton characters have been retained, together with several new features: a creeping poisonous fungus which grows at an alarming rate; time bombs and time capsules (for puzzles in the 4th dimension); and golden crowns as well-deserved rewards for your endeavours. **Can YOU complete Repton 3?**

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The screen pictures above show the BBC Micro version of Repton 3.

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GUIDE TO THIS MONTH'S REVIEWS

Software Shortlist

Each of the games reviewed in Software Shortlist has been reviewed extensively by our team of reviewers.
We do not include reviews of unfinished products in this section of *Your Computer*; they are the games you can buy now or in the near future.
See the Software News and Preview features for advance news of games being developed.

Watch for the *Your Computer* Soft Stars. They are awarded to games which, in our opinion, offer outstanding value.

THE AMERICA'S CUP

► *C64 ● U.S. Gold ● Simulation ● Francis Jago ● £9.95*

Not many people can afford to fly to Perth to see how White Crusader – or for that matter any of the craft – are doing in this ultimate challenge of strength, resilience and tactics. At best we can watch the amusing if uninformative Channel Four reports.





Now, owners of Commodore 64s or Amstrads can experience the thrills and spills – of which Harold Cudmore has had more than his fair share – of 12-metre yacht racing, courtesy of yet another U.S. Gold licensing deal, this time with Armchair Action, an Australian software house.

Once the game has loaded you are prompted to choose whether you will battle with a friend or the computer. Then you must tie your allegiance to a particular country. Once those mundane options have been set, you are requested to choose at which level you wish to compete, between amateur, club and *America's Cup*. To start, amateur is the only level where you stand any chance. The wind is not too strong, it does not change direction, and the computer is as fallible as your are. Club is more reasonable and the computer makes life difficult, though by no means impossible. For the experienced player, America's Cup is the level to play, with its 30-knot winds and constantly-changing direction.

To enable the player to make the most of his yacht, there are six sails from which to choose, three genoas and three spinakers. Using them correctly, it is possible to make the most of whatever wind you are in, ranging from very light gusts to a full-blown gale. In each race the course is the same and it requires a great deal of sail changing and not a few snazzy rigging moves.

To emphasise the reality of the game, all the original racing protocols have been maintained and 10-second penalties are incurred by any offenders. Care must also be taken when performing gybes or you could lose a man overboard. Overall, America's Cup is very enjoyable. A knowledge of racing would help but is by no means essential, especially as the manual has a detailed section of the dos and don'ts of sailing.



GALIVAN

► *Various* ● *Ocean* ● *Arcade* ● *Francis Jago* ● *£7.95/£8.95*

There is one simple rule of thumb to which all software companies thinking of obtaining an arcade licence should adhere – do not bother to license a game which was boring in the arcades, or the best for which you can hope is a boring conversion.

GRAPHICS
● ● ● ●
SOUND
● ● ● ●
PLAYABILITY
● ● ●
VALUE FOR MONEY
● ● ●
OVERALL
● ● ●

Unfortunately *Galivan* is a case in point. The conversion is, with a few exceptions, of a very high standard. The game, on the other hand, is unimaginative and becomes boring quickly, especially if you are good at this type of walk-along, jump and shoot game.

As with most of the recent crop of Ocean/Image games, Galivan starts on a great note, Martin Galway's excellent loading music. After that, however, the game goes downhill rapidly. The first section is spent mastering the frustrating art of jumping the enemy. At the beginning of the game you are equipped with no weapons, so although some baddies can be punched to death, most must be avoided at all costs.

As you go further into each level, the baddies become progressively more



dangerous until, at the end of each level, you are confronted by a three-headed monster which requires you to kill each head individually. Unfortunately, once that is completed, the game gets no better.

Overall, Galivan is a well-converted game but it is still boring.

DANDY

► *Various* ● *Electric Dreams* ● *Arcade* ● *Daniel McGrath* ● *£8.95*

Druid may have been first but *Dandy*, the latest *Gauntlet* clone from Southampton-based Electric Dreams, will certainly take some beating for the accolade of the best rip-off of the arcade classic.



Released first on the Spectrum, with Amstrad and Commodore 64 versions to follow, the game is based closely on the Atari game which inspired the coin-op.

Anyone who has played the arcade game will feel at home immediately with

GRAPHICS
● ● ● ● ●
SOUND
● ● ● ●
PLAYABILITY
● ● ● ●
VALUE FOR MONEY
● ● ● ●
OVERALL
● ● ● ● ●

Dandy. The graphics are similar and the gameplay allows for the same feeling of glorious mayhem. As with Gauntlet, Dandy allows two players to play simultaneously, although on a Spectrum keyboard it can become very cramped.

There are 15 dungeons in all which can be played in any order. As you work your way through each level various treasures can be traded for energy, as well as literally hundreds of baddies to make life almost impossible.

It is a matter of whether you have already bought *Druid*. If not, whether it is because you are waiting for Gauntlet. If the answer is no to both, Dandy should be a definite part of your games collection. Gauntlet is unlikely to be any better and it could possibly be much worse.

Electric Dreams is really starting to get it together and if you read the company profile elsewhere in this issue, you can read about what it is planning for the future.

ORBIX THE TERRORBALL

► *Spectrum* ● *Streetwise* ● *Arcade* ● *Francis Jago* ● *£7.95*

Streetwise is a new label from Domark, the company that brought you Trivial Pursuits. Apparently it has been created to allow Domark to stick to releasing high-profile game such as Trivial Pursuit, which incidentally has just had 3,000

GRAPHICS
● ● ● ●
SOUND
● ● ●
PLAYABILITY
● ● ● ●
VALUE FOR MONEY
● ● ●
OVERALL
● ● ● ●

new questions released, and Streetwise will release games that have no tie-in, but are more arcade orientated.

Orbix the Terrorball was created by Domark's only in-house programmer, John Pragnell, with help from designer Mike Green and software manager Richard Naylor. With inspriation taken from a variety of games, ranging from basic shoot-'em-ups to Bobby Bearing type Marble Madness Clones, Orbix is publicised as a 'bouncing shoot-'em-up, with some unique touches'.

Your mission is to rescue the stranded crew of a distressed space craft lying on a hostile planet, in this case Horca. The planet is literally littered (if you'll excuse the literal) with various menacing insect like aliens, who ate the spacecraft and forced the crew to flee. You must first rebuilt the craft, and then pick up the crew and escape.

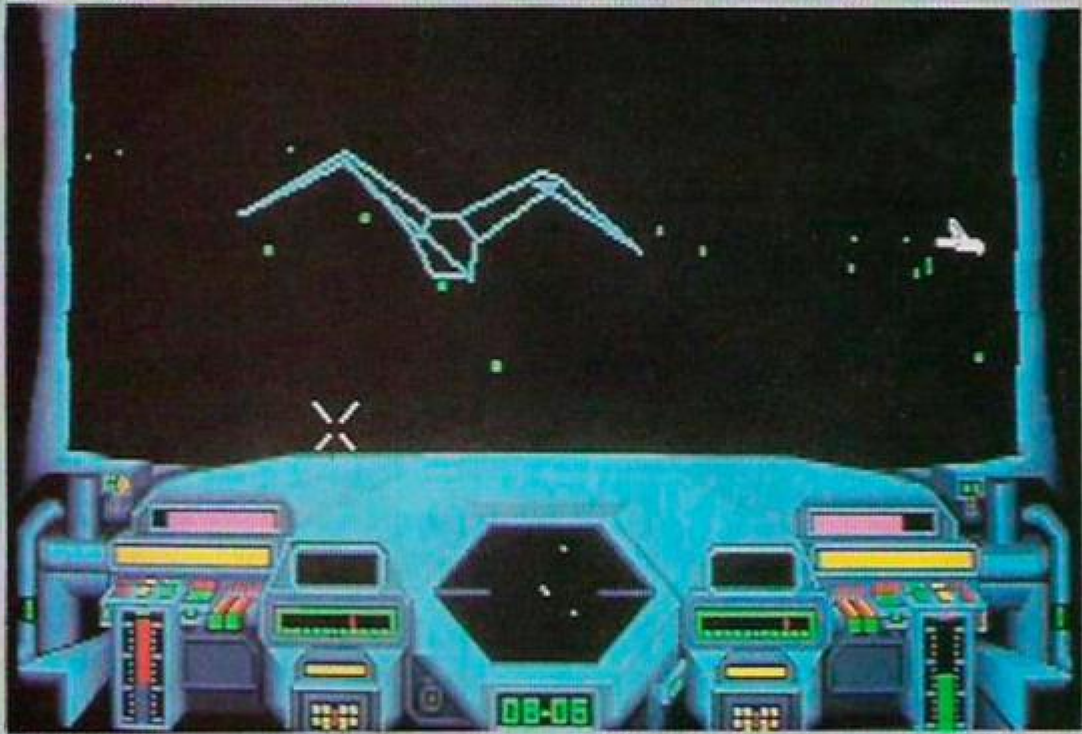
With a powerful gun, and a great deal of determination, you must blast these aliens and then pick up the little object they leave behind after death. Avoiding holes, as well as some very clever critters, you must fight to stay alive.

Graphically, Orbix is very pretty, and the joystick control is good, if a little difficult to get used to. When you compare it to games such as Friday the 13th, one of Domark and this industries worst ever games, it becomes obvious that Streetwise is a great improvement.



S TARGLIDER

▶ *Various* ● *Rainbird* ● *3D Arcade* ● *Jim McClure* ● *£24.95*



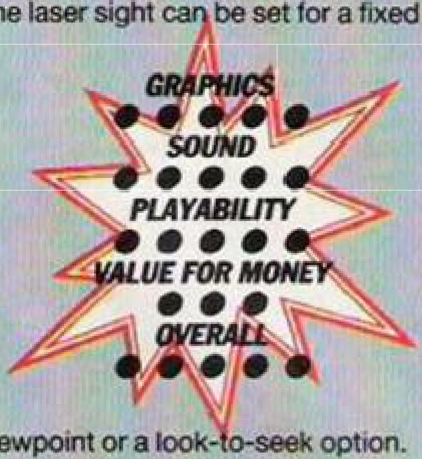
Rainbird has done it again. After producing the best adventure, it has now released *Starglider* for the Atari ST and it will be available on other formats soon. Although the game was programmed by Jeremy San, he also plays Jan San the hero in the booklet supplied with the game. Programming a game like this, I am not surprised he is the hero.

The planet Novenia has been taken over by Herman Kruud, fleet commander of the Egron's invasion force. He drives one of the Starglider ships about which everyone is talking in terms of hi-tech nastiness. With all the odds stacked against an outdated fighter, the freedom of Novenia depends on it but after near nuclear destruction according to the booklet, is it worth rescuing?

Using the mouse to fly the airborne ground attack vehicle or AGAV gives a strange sensation of weightlessness.



The fighter can be taken from standing to an exhilarating high speed almost immediately and will hover or gain altitude on the spot – useful in those tight situations with a skim fighter in pursuit. The laser sight can be set for a fixed viewpoint or a look-to-seek option.



The only other weapon is the guided missiles, with guided being the operative word. The missiles are lauched as they are reminded by a digitised voice, with a tailgate television camera providing a clear view of the direction in which the missile is travelling. They will knock out anything you might encounter.

Repairs to the ship can be made, using one of the repair silos, which will repair damaged energy fields and re-fuel the laser cells on board the aircraft.

Refuelling the plasma drive on it is a different matter, as the silos were constructed originally to repair sentinels, ships which used to protect Novenia from invasion until Herman arrived.

The plasma drive powers the ship and can be re-fuelled by flying low over the energy tower power line, though severe action will be taken by the Novian air force, those you are trying to rescue. Also according to the manual, AGAV is fitted with a NetCell communications system; British Telecom better beware, as might IBM, which designed in conjunction with Draziw (wizard) Industries the on-board computer.

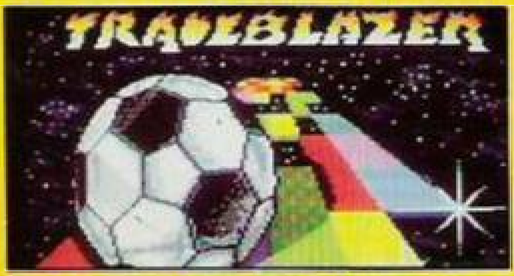
Herman's fleets of Bute fighters, skim fighters and Stargliders are challenging, with hot pursuits and dogfights providing the majority of the game play. The game bears some similarities to the Acornsoft *Elite* but in play surpasses it with the use of the mouse. There are only two words that I can say about this game – buy it.



TRAILBLAZER

► *Various ● Gremlin Graphics ● Arcade ● Francis Jago ● £8.95*

If I had to name one game which I would have said was a definite number one which never even got close, it would be *Bounder*, one of the best games released by Gremlin. It employs the concept of a



ball bouncing over a vertically-scrolling landscape, with various holes in the floor you must avoid. *Trailblazer*, the latest release from Gremlin, takes the idea a great deal further and in doing so it has produced one of the most playable games I have seen.

The idea is to race either another player, or the computer, and to hop, skip and jump your way through the various courses. That may sound easy but the ball you are controlling travels at such speed that it is all but impossible to avoid falling down holes left, right and centre.

As you play the game you will notice that each colour on which you land affects your ball in a different way. Blue squares force you to jump – not always a good thing – and white squares put you into an excellent hyperspace which, if used correctly, can increase your bonus fourfold.

Graphically, the game is exceptional, particularly on the Commodore, where it uses a split screen for the two-player mode. Instead of having a particular direction of scrolling, the screen races towards you and in some places it is so fast that even the most dextrous hands will be lost.

Considering the music was not created by a well-known name, it is catchy and enjoyable, as are the sound effects, which suit the game perfectly. When I first saw the game some months ago I was struck by its originality but thought that it lacked some finesse. That problem has been sorted and the game is one of the best of 1986.

GRAPHICS
SOUND
PLAYABILITY
VALUE FOR MONEY
OVERALL



ACADEMY

► *Spectrum ● CRL ● Simulation ● Daniel McGrath ● £8.95*

Tau Ceti, the game pronounced in more ways than any other, came as a complete surprise. Pete Cooke, the author of the game, was not well known, but the game has been acclaimed by many, including me, as one of the games which makes it worth owning a Spectrum. When, therefore, *Room Ten*, Cooke's second game arrived I was slightly disappointed to find that it was completely different and was not what I had hoped for – *Tau Ceti II*.

Now, however, all is forgiven. *Academy*, the official follow-up to Tau Ceti is here and it was worth the wait. It is definitely as good as the original, although understandably the author has created a new and exciting environment. Anyone who has played Tau Ceti, and judging by its sales there are many, will instantly feel at home.

Beginners, or rookies as they are known by the superiors in the Gal-Corp organisation, have not been particularly popular since one of them selected the wrong gear when docking into the main central reactor and reduced half the planet to molten lava. That horrific crash caused the organisation to decide that mandatory training was extremely necessary, prior to anyone becoming a recognised pilot.

The Galcorp Academy for Advanced Skimmer Pilots (GASP) was founded in

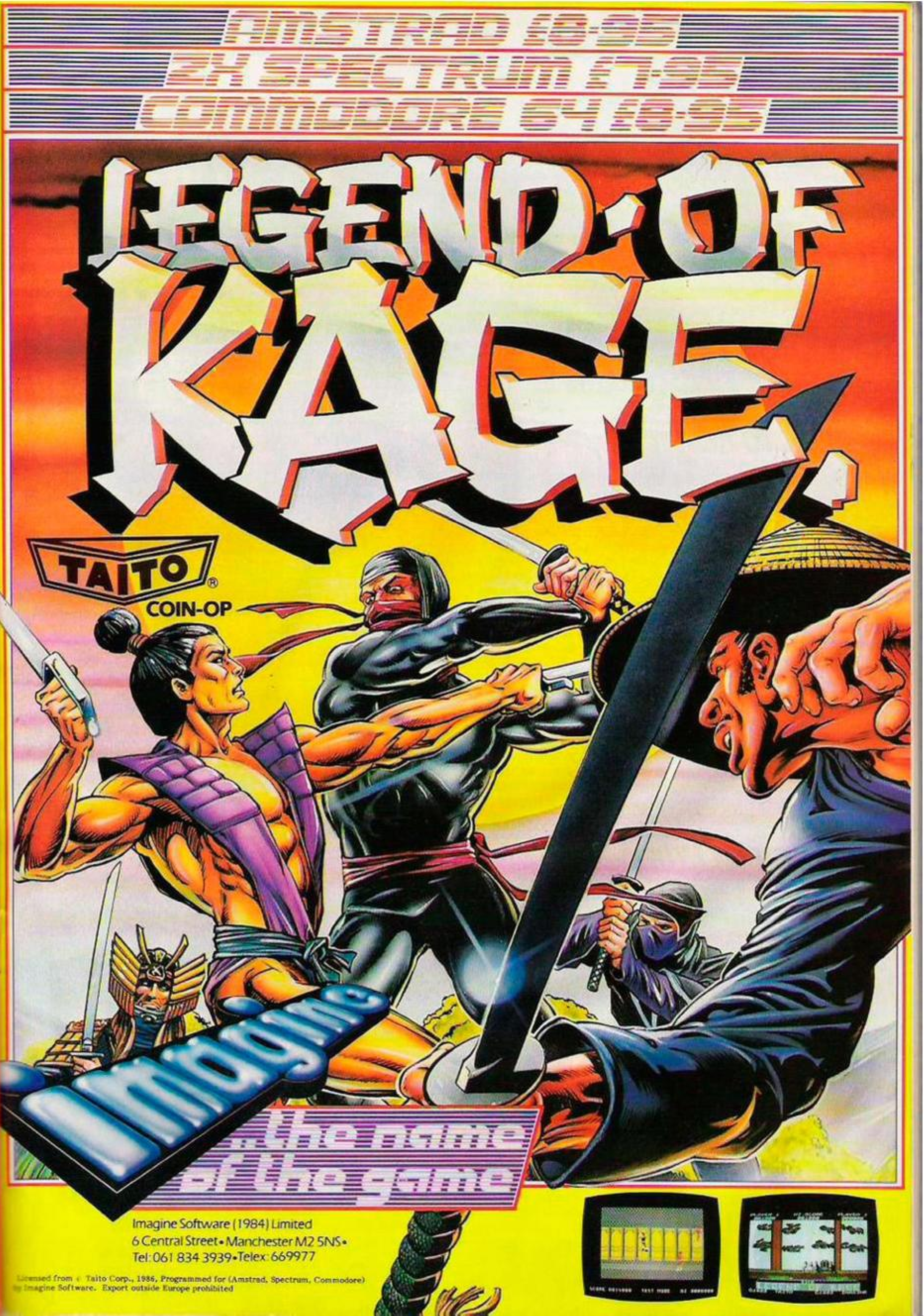


2213 to meet the new strict training requirements. To graduate, you must undertake on and complete 20 missions, grouped in five levels of four.

As with the original, the graphics and animation in Academy are stunning and if anything the game appears a little simpler to get into. It represents exceptional value, especially when you consider the man-hours which must have gone into the creation of this masterpiece. If you miss this game you will be missing the chance to experience Spectrum games at their best.

GRAPHICS
SOUND
PLAYABILITY
VALUE FOR MONEY
OVERALL





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TERRA-COGNITA

► *Amstrad/Spectrum ● Code Masters ● Arcade ● Daniel McGrath ● £1.99*

OVERALL ● ● ●



This game, by the author of the very impressive *Non Terraqueous*, is a fun game but it is so difficult to play on the Spectrum that it loses any appeal.

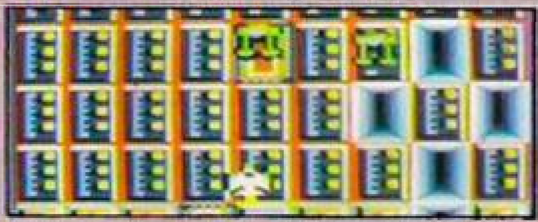
The Amstrad version is better, as you would expect, but it is only then that you realise the other shortcomings.

It is a budget game and therefore allowances should be made but the author has proved that he can do better, so let us hope that for whoever he writes his games in the future, they are as good as the first.

RED MAX

► *C64 ● Code Masters ● Arcade ● Francis Jago ● £1.99*

OVERALL ● ● ●



Even if you disliked it, *The Last V8*, the first release under the MAD label, was a milestone in budget games. It marked the point when it was no longer good enough to release any old rubbish – the games must have good graphics as well as a snappy tune.

Red Max is the follow-up to The Last V8. It, too, has good graphics and a snappy tune – courtesy of new wonder boy James Whittaker – and it is a great deal more playable than the original. Priced as it is, the game seems set to be a massive success.

BACK TO REALITY

► *Amstrad ● Mastertronic ● Arcade/adventure ● Daniel McGrath ● £1.99*

OVERALL ● ● ● ●



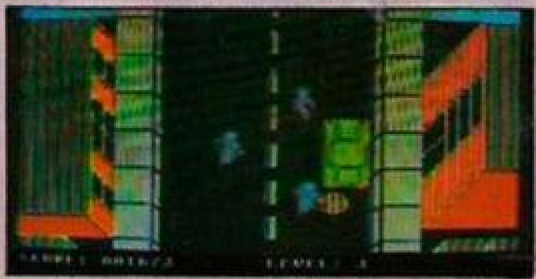
I hate games I cannot beat. Normally I give up in disgust and throw the game at the nearest bin. I then telephone the software house concerned and ask timidly for help. When playing *Back to Reality*, I was determined that, for once, the game would lose.

Needless to say, my ideals were shattered and the game won. The graphics are by no means outstanding, although the loading screen is excellent, but the game plays exceptionally well and should keep arcade adventurers happy for hours.

LOS ANGELES SWAT

► *Atari 800 ● Mastertronic ● Arcade ● Peter Luke ● £2.99*

OVERALL ● ● ● ●



Although there are not many games released for the Atari, most are priced at around the £14.95 mark. That is understandable, especially when you consider that they will not sell more than a few thousand units at best. *Los Angeles SWAT* should entertain anyone who has ever wished they could join T. J. Hooker on his rounds.

should entertain anyone who has ever wished they could join T. J. Hooker on his rounds.

You control the team leader and the game plays until your whole team has been destroyed. By no means a classic, the game represents good value and should be checked by anyone looking for a few hours' fun.

BMX SIMULATOR

► *C64 ● Code Masters ● Arcade ● Francis Jago ● £1.99*

OVERALL ● ●



Richard Darling, together with his brother and his father, obviously believe that innovation is something to be avoided at all costs. Code Masters, the label on which they are now releasing their budget games, will probably flourish but let us hope it is not riding purely on the success Mastertronic brought.

BMX Simulator is a follow-up – or very nearly – to *BMX Racer*.

The graphics are crisp, the sound effects good, and the game boring to play. It looks much better than it plays. The Darlings can do a great deal better.

TERMINUS

► *Spectrum ● Mastertronic ● Arcade/adventure ● Francis Jago ● £2.99*

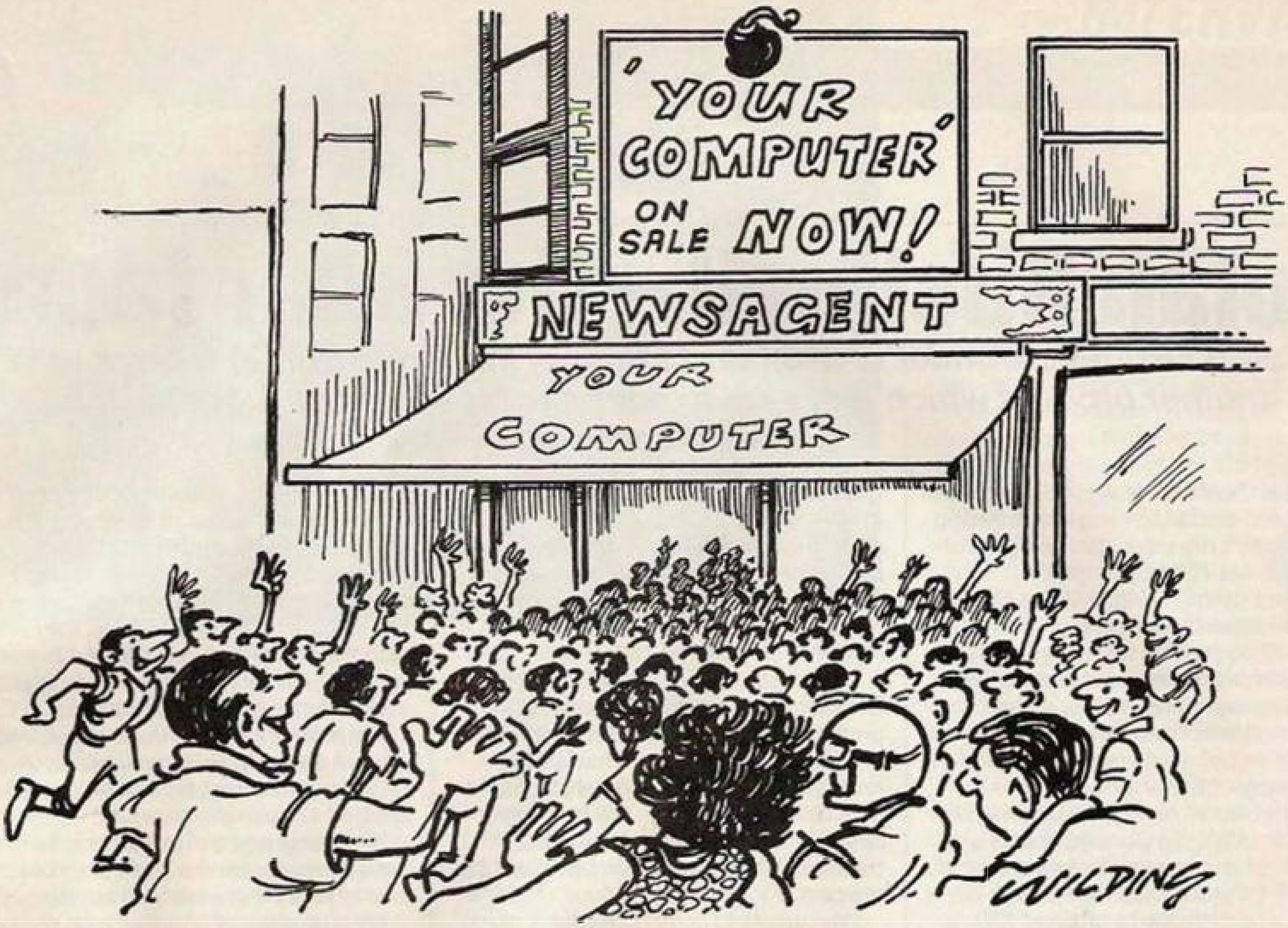
OVERALL ● ● ● ● ●



Mastertronic has an uncanny knack of releasing excellent games very quietly. Of the last three or four games from Mastertronic, this rates as the best. Released on the MAD label, it is an arcade adventure which achieves something many full-price games cannot – playability.

Using very colourful graphics and not a little humour, the object is fairly standard – walk, fly and shoot your way through as many of the rooms as possible.

Your character can be changed using a special teleporting unit and one of the characters is the cutist thing ever. If you own a Spectrum, do not miss it.



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Nolan Bushnell – the Bear facts

Nolan Bushnell, founder of Atari and father of the video game, is back with another product which looks set to continue his record of success. John Barnes investigates.

Nolan Bushnell, founder of Atari, has been credited by many with having started the video games boom of the late 1970s. His tennis simulation game, *Pong*, was the first of many releases by Atari and is undisputably the first video game to have been invented. He is a man who seems to specialise in starting crazes, as his record and latest product, the Petster range of electronic animals, testify.

The story of Bushnell's latest company, Axlon, starts in 1976 when he sold Atari to Warner Communications for $28 million and went on to found the Chuck E Cheese Pizza Time Theater, a project which created a chain of 250 restaurants across the U.S. Those fast food restaurants serve as a further example of Bushnell's obsession with toys and games. The Pizza Time Theater aimed to combine fast food with electronic games, amusements and musical entertainment provided by computer-animated robot characters, thus creating a video arcade and restaurant under the same roof.

It proved to be a brilliant idea but a difficult business to run and was sold in 1985, a victim of falling interest in video games and heavy competition from the larger fast food chains.

Following that brief but relatively successful spell in the world of catering, Bushnell formed Catalyst Technologies, the organisation from which Axlon was born. Catalyst Technologies was a venture capital organisation which backed entrepreneurs financially, also providing business plan development and management guidance.

Described as "an incubator to mass-product small businesses", several successful companies grew and a number of projects were started by Bushnell, particularly in the field of robotics, work which was to be of use to Axlon.

It has been said of Bushnell that he finds technology while in search of products, while others search for products in technology. That is as relevant to his latest range of electronic pets as it was to Pong. The electronic family of animals looks set to make traditional living pets very much a thing of the past.

Who wants to carry heavy cans of cat or dog food from a supermarket when the Petsters do not need feeding and do not make one feel too guilty if they are locked indoors all through the weekend? Very much in keeping with the trend towards convenience products the video age has generated, Petsters are the first convenience pets which can be brought out when affection or company is needed.



To see the Axlon animals simply as toys is somewhat naive. In finding this particular product Bushnell has also increased the likelihood of domestic robots in our homes. While we can see the electronic animals as toys, they are also the first of a generation of domestic robots Bushnell thinks feasible to appear in our homes by the year 2000.

Your Computer interviewed Bushnell and we discussed his triumphs, his views on the home computer market and how Axlon is likely to develop.

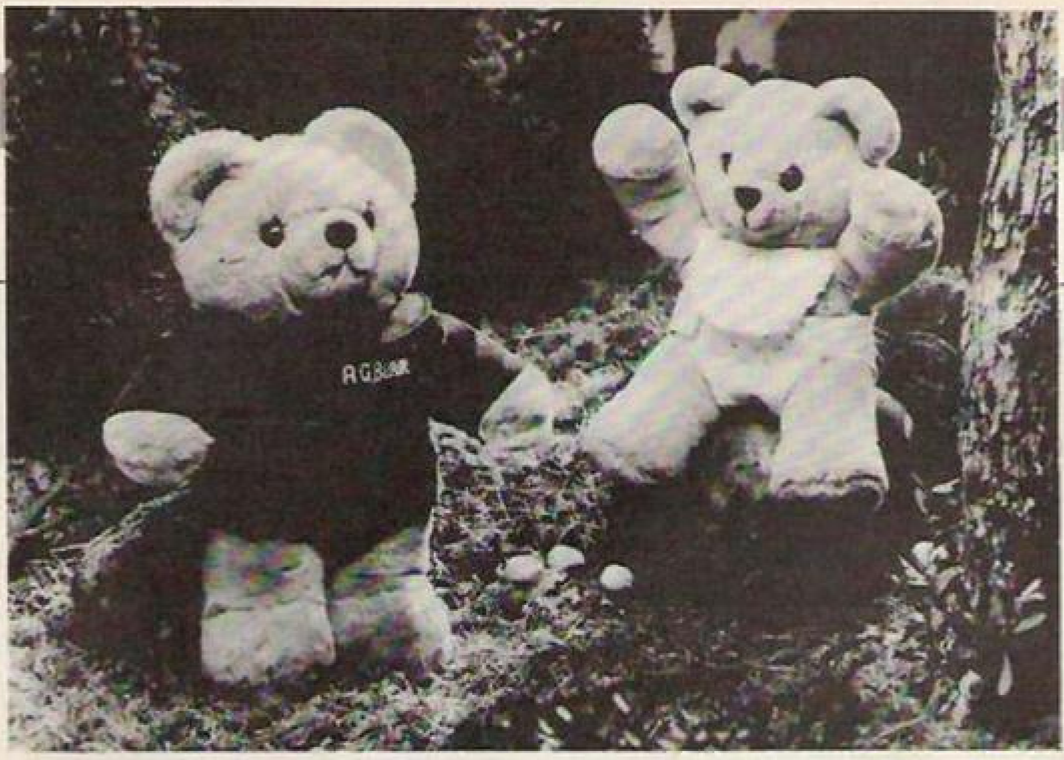
YC: *Pong was a major advance in the development of home computers but is it one of your most satisfying successes?*

NB: I do not really run that way, as I like the things on which I am working on much better. When I invented Pong I thought that was the best and now its Petsters. I think I want to live in the future, as I believe it will be much better and I want to do everything in my power to make it happen faster.

YC: *Do you think computer games have changed in a good or bad way, not just technically but as entertainment?*

NB: That is difficult to answer. Obviously there are many good games – and a lot of trash – but I am very proud computer games are around and that I was involved when they began.

They are an essential part of the future and the way they have helped the technological advance of computers serves to prove that. The computer would be significantly behind now if it



had not been for the advent of the video game.

YC: *You left Atari at what must have been its peak. How do you think it has developed since you left?*

NB: I would say it peaked about 16 months to two years after I left but let me tell you about what happened with Atari. When I had left Atari it turned into a very good harvesting machine but forgot how to sow, releasing nothing which had not been in the laboratory when I was still with the company.

To have the technical talent I had assembled and let it fritter away and do nothing was in my view mismanagement. Then Jack Tramiel took over Atari 18 months ago and already he has the ST and the company is doing something again.

YC: *What are your views on the state of the computer market?*

NB: I think it is catching its breath. There is a very interesting thing happening now – and that is that PC clones are becoming so cheap. It is reaching the point, in the States at least, where you can buy an IBM XT with a monitor for about $1,200 and if you want a regular PC you need pay no more than about $600.

Those falling prices mean that people are suddenly considering PCs for use in the home but the IBM PC is a difficult machine to operate and therefore is not really suitable for casual use. At the same time we also have the Macintosh, which is the proper machine for most people to have in their homes, as they can sit down with it and do something useful after 30 minutes.

The Macintosh, however, costs in the region of $2,000. So on the one hand there are the cheap machines which are difficult to operate, while on the other there are the easy machines which are expensive – a bizarre situation which must change.

YC: *Do you think the Amiga will be the saviour of Commodore?*

NB: I do not think it is the Commodore saviour but I believe that there is a place for it in the market. Whether Commodore can slim itself down or not and live on it is another question.

YC: *Do you think Commodore failed to learn the lessons it should have done from Atari?*

NB: I believe that for the last two years Commodore has really stubbed its toe. It did exactly the same thing as Atari by not having a real new product – just a series of upgrades – except, of course, for the Amiga.

YC: *There was a rumour that someone was to buy the Amiga. Do you think that there is any truth in that?*

NB: I do not think there is such a thing as Commodore without Amiga.

YC: *There was also speculation that Commodore would license the technology of Amiga. Is there any viability in that?*

NB: It is extremely viable and is what JVC did with VHS video technology in the States. By licensing the technology there was greater market penetration and so VHS became the standard instead of Beta. If you did the same with the Amiga system it would probably generate sufficient software to support it for some time.

YC: *There has been talk of you working with Steve Wozniak. What are you doing?*

NB: We are going to try to do some work together but we do not really know what is going to happen; just watch this space.

YC: *Do you see the Petsters, or rather the robotics on which they are based, as a continually upgrading market?*

NB: Absolutely.

YC: *You cannot therefore see limitations on how far they can be improved?*

NB: I do not think so. It is like saying there is a limitation on technology.

YC: *Can people afford them – they are not just toys for the wealthy?*

NB: No; the price keeps going down and down.

YC: *How do you see yourself going. You will not just stick with Petsters or animals. There must be more to Axlon than that?*

NB: Well, when you start a company there are two things you want to do. The first is to get a reputation in the market and the second is to get a cashflow. You have to do it as quickly as possible, as there are some projects which take a long time and need to be financed. So as soon as you get things started you get a cashflow and can then get started on some of the projects which are exciting.

The company is only two years old so we could not possibly have done anything which is more than two years clever. You will soon be able to see some of the products on which we have been working. The thing in which you would be most interested is *Tech Force*, which was released in the States in November. It is the first truly three-dimensional video game.

It is really a series of computer-operated play pieces which are controlled independently by a computer console which can handle up to 16 separate units. We would both have eight players and by using the console we could control their movements.

There is also a thing called the audio link which, if placed near to a television set, will provide audio and video tapes which can set up a story and allow the TV to take control of the bad guys.

YC: *How are these robots controlled?*

NB: The console sends an encoded message and each play piece has its own address.

YC: *Will it be possible to plug-in an existing home computer to the system, or is that supplied by you?*

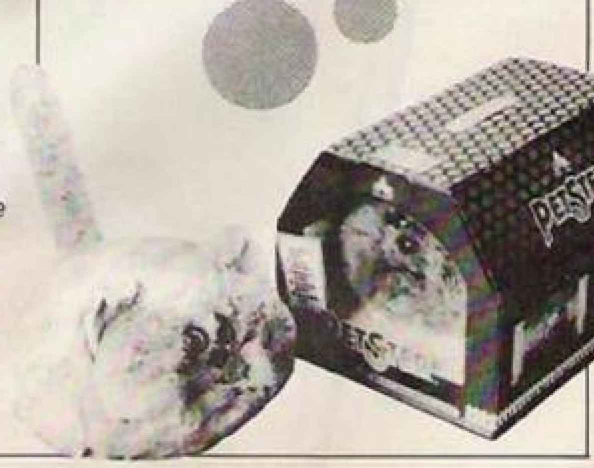
NB: We are selling the computer but it will be a stand-alone and the audio link means that you could plug it into an existing computer.

YC: *Have you ever thought of writing software?*

NB: I think we probably will be doing software at some point.

YC: *If you were able to do it all again, do you think you would still have invented Pong?*

NB: Absolutely. It was the natural thing to do. I do not think I could have stopped myself.



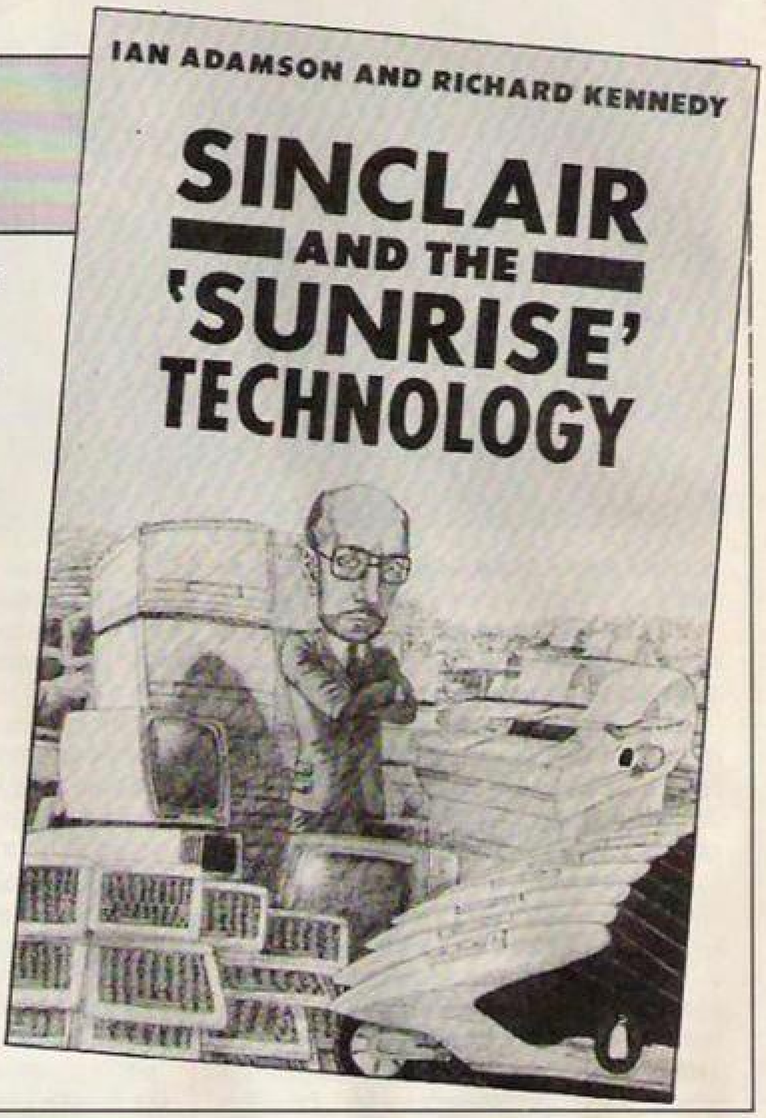
Sinclair and the 'Sunrise' Technology
Authors: Ian Adamson and Richard Kennedy
Publisher: Penguin
Price: £3.95

"Why does Sir Clive Sinclair merit our undivided attention?" Surely that is a poor start to a book which will then spend almost 300 pages talking about the countless rises and falls of this idiosyncratic English boffin. Everyone has heard, and lamented, the fall of Sinclair computers to the hands of Amstrad, for the pathetically small fee of £5 million, but this book takes the whole story a great deal further.

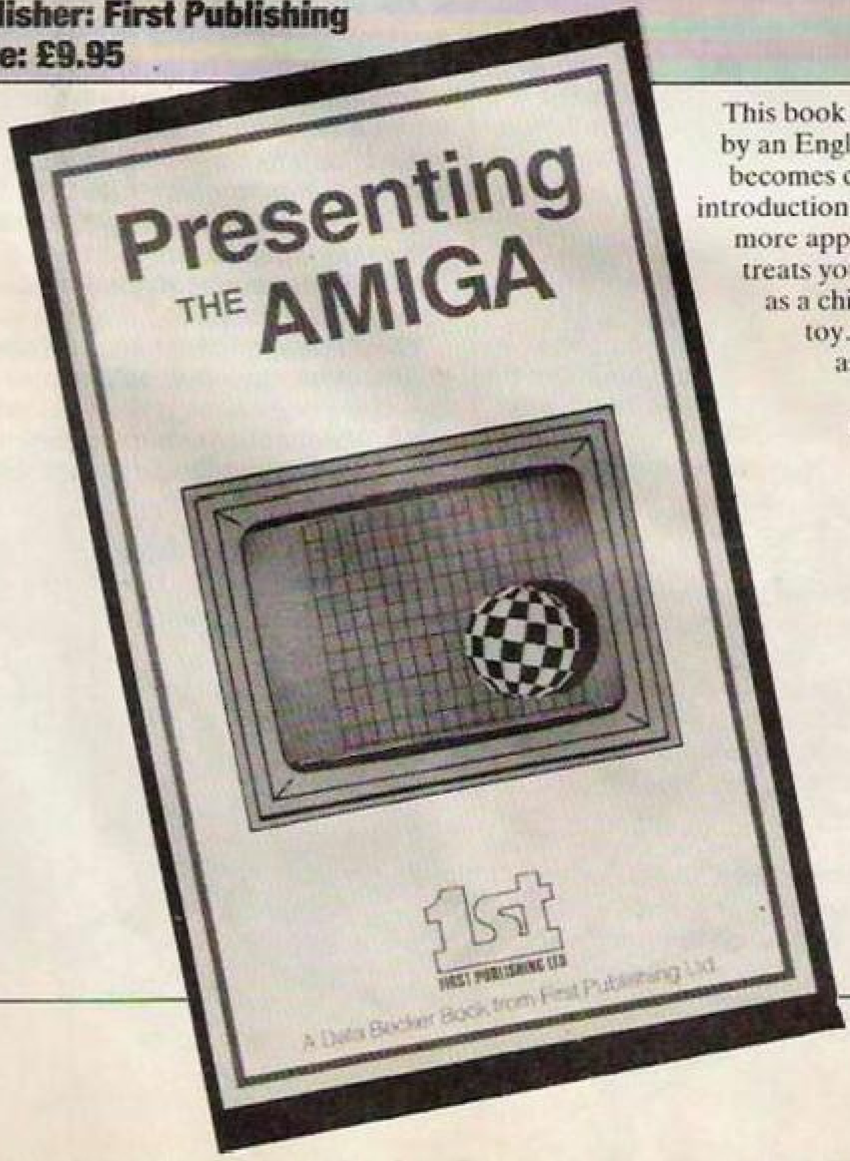
Starting with his early pursuits as a technical journalist, and later as an author of such titles as *Transistor Subminiature Receivers Handbook for the Home Constructor*, the book travels through the life and times of a man who has been described as "Margaret Thatcher's favourite entrepreneur".

One thing which becomes increasingly clear as you proceed further into the book is that by no means was Sir Clive the possessor of a Midas touch. In fact, a great deal of both his early and later ventures were doomed to failure in concept as well as execution.

If there is one criticism that should be made of the book, it is that the first half seems to be spent criticising Sinclair Research, as the product of Margaret Thatcher's economic policy and the second half is a direct attack on Sir Clive. Neither section is justified – they seem to lack cohesion. Apart from that the book is compulsive reading and should be helpful for anyone wondering whether to invest in any new Sinclair ventures.



Introducing the Amiga
Author: Christian Spanik
Publisher: First Publishing
Price: £9.95



This book is not written by an Englishman. That becomes clear from the introduction and becomes more apparent later. It treats you, the reader, as a child with a new toy. Phrases such as "The mouse on its own is obviously not much use" make the first few pages unhelpful unless you have no clue what a computer is, and in that case the Amiga is not the machine for you.

Once past the first chapter the book becomes a fairly standard Amiga book, of which there must have been five released immediately after the launch of the machine. The book covers the mouse environment, intuition, windows, and making the most of the provided workbench disc. One problem I found is the lack of colour, apart from four pages at the back. When explaining a machine which has the potential for 4,096 colours on-screen at once, it seems odd to have the book in black and white.

The next major section of the book consists of a detailed description of the Microsoft Basic provided with the Amiga. That section is probably the best and anyone who wishes to use Basic to harness the power of the Amiga will be thankful.

The rest of the book is a jumble of appendices, trouble-shooting and a few colour pictures. Overall, the book is a bit of a let-down. If it were written originally in English that would be a start but the problem is deeper-rooted than that. The section on the CLI, is painfully inadequate, and overall the book is just not good enough to act as a companion to a machine as powerful yet idiosyncratic as the Amiga.



Wargaming on the Amstrad
Authors: O. & A. Bishop
Publisher: Argus Books
Price: £8.95

Combining new technology with old has always been a pastime which creates odd though normally interesting results. As any historian would tell you, war-gaming has been an occupation for many centuries. On that time-scale, however, computers are distinct newcomers.

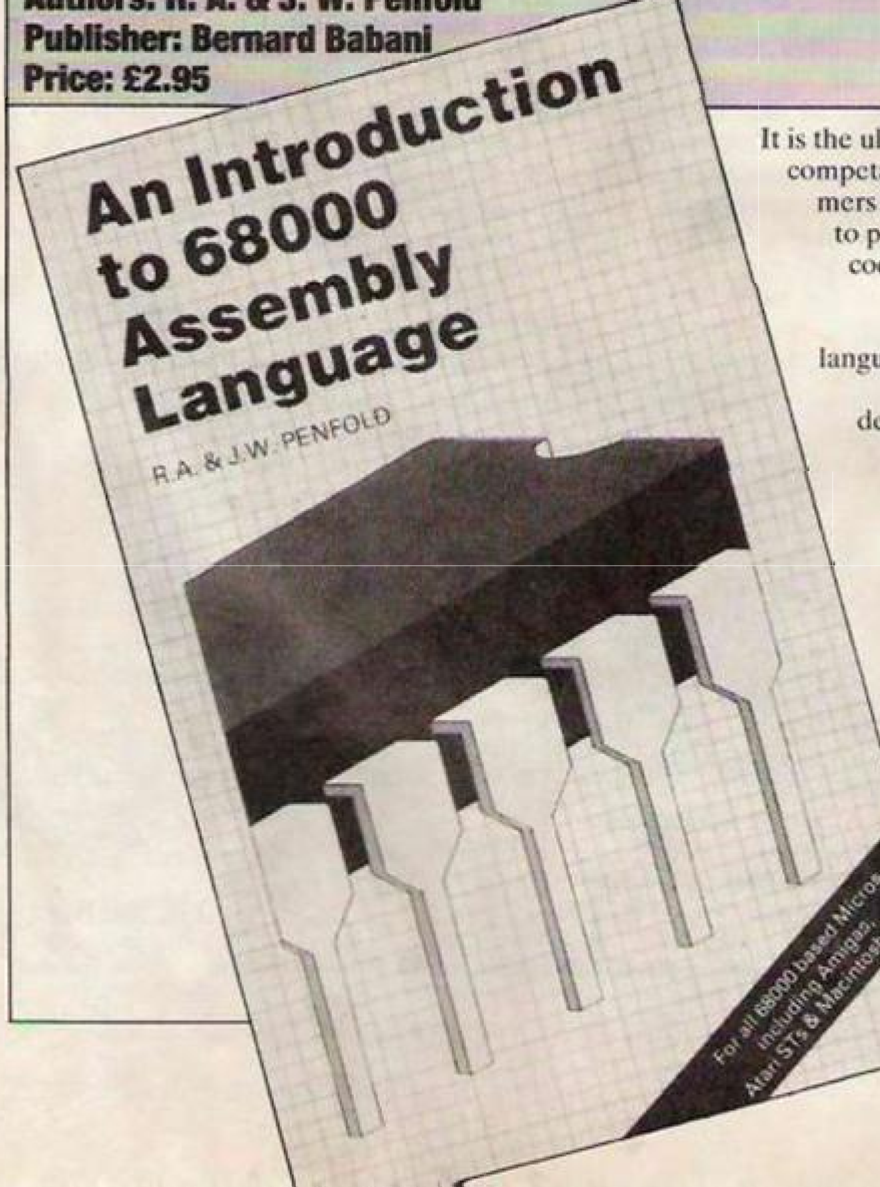
Owen and Audrey Bishop are, according to people who know a great deal more than I do on this subject, the originators of computer war-gaming. It is obvious that they have spent a great deal of time researching this book and making it appeal, not only to war-gaming buffs, but to anyone intent on finding alternative uses for an Amstrad.

Designed obviously to appeal to the dedicated hobbyist, the book is complete with three separate type-in programs which will provide war games to satisfy everyone from the War of the Roses to World War II. What must be said, however, is that the book is much more than just an explanation of how to war game. It takes the approach that everyone will want the computer to be an integral part of any actions and the authors take every opportunity to show how their programs can be adapted and altered to suit the needs of each reader.

One of the most innovative and interesting sections describes how it is possible to connect two Amstrads to allow multi-player war-gaming. Also described is how to adapt the provided games to play using this method.

Taking the idea one stage further, the final chapter describes how to play wargames by telephone, using a modem. For Amstrad owners who want to try something completely different, the book is refreshing and interesting and the authors' enthusiasm adds a great deal to a book which might otherwise have failed to keep anyone interested beyond the first chapter.

An Introduction to 68000 Assembly Language
Authors: R. A. & J. W. Penfold
Publisher: Bernard Babani
Price: £2.95



It is the ultimate aim of most competant Basic programmers to learn eventually to program in machine code. Although there is a certain kudos about assembly language programming, is it also a great deal faster, and once you have grasped the principles, not much more difficult than some of the more common high-level languages, such as Forth and Pascal.

This book deals, as comprehensively as possible in fewer than 100 pages, with the main principles behind programming the extraordinarily powerful 68000 range of processors, including more basic relations such as the 68008. The first chapter is used to introduce the microprocessor and to familiarise the reader with the basics behind how this piece of hardware works. In the chapter the authors discuss binary, the stack, hexadecimal and flags.

Chapter two deals with the various addressing modes, or the means by which the processor determines the location of the data on which the instruction is to operate. As a reference guide, chapter three will prove useful to anyone interested in 68000, as it contains a full listing of the instruction set, including mnemonics and descriptions.

Later chapters discuss assemblers and then proceed to simple programming exercises, including addition, multiplication, division and loops. The authors have gone a long way towards making sure it contains sufficient to allow almost anyone to glean some useful information.

Any Atari ST, Amiga, Macintosh and QL owners who wish to make the most of those powerful machines should find justifying the cost very easy.

WOT?? JUST A LOUSY QUID??

Let's face it. You've spent a lot of hard-earned cash to get your computer, and it's a bit of a grind to discover you have to shell out a hell of a lot more for books!

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SPECTRUM

SP 02

Jum*Bert

Program type: Arcade
Author: Norbert Roescher

This program is a fast machine code version of the classic *Q-Bert* arcade game. It features a good title screen with two-channel sound, re-definable keyboard or joystick, plus animated graphics and game music. The object is to colour the pyramid green, avoiding all the nasties.

Castle Dracula

Program type: Adventure
Author: Graeme Poole

Your mission, should you choose to accept it, is to enter Dracula's realm, find the castle and destroy him. This weighty adventure recognises six directions, 11 other Basic commands, plus a save/load game feature. The program is well-written and documented, so it could easily form the basis for your adventure plots.

SP 03

Centypeed

Program type: Arcade
Author: Stuart King

This copy of the famous arcade game has all the features found in the original. Your snakeheads must survive in the mushroom patch but various things do their best to stop you. The program is 100 percent machine code, which gives plenty of fast action.

Frantic Day

Program type: Arcade
Author: John Weatherley

In this machine code platform game you must take the role of Fred and help him through his frantic day. There are nine screens, each with its own sprites, conveyors, scrolling platforms and the such like. The program can be played with a keyboard or Kempston joystick and features a cheat facility for you to try the later screens.

SP 04

Exbasic

Program type: Programming tool
Author: Dave Spagnol

Exbasic is an excellent Basic extension package for the Spectrum. Some of the numerous features are procedures, on-screen trace, clock, auto-line numbering, stack control, character re-definition, screen storage, an improved line editor and much more. Full instructions are included.

Windows

Program type: Programming utility
Author: Paul Rhodes

With this window utility you can create up to 14 separate windows which can be shown simultaneously. They are accessed from the Basic PRINT statements and an extended command set. Features include pixel scroll and pan, window position and size, double-height characters, extended LIST, clear screen and fill commands. Full instructions for the new commands and error messages are included.

SP 05

Pool

Program type: Pool simulation
Author: A. Mehmood

Rather than the two-player game of *Pool*, this simulation gives you a certain number of shots in which you attempt to clear the table. With the use of only a few keys it is possible to simulate eight types of spin, speed and direction.

Cashflow Statement

Program type: Home use
Author: A. Mehmood

This program helps you keep a record of your cashflow, which is a useful facility for many people. Full details of your cashflow are kept as a series of dated transactions, which can easily be added, deleted or amended. They can also be sorted by date, amount or transaction type and printed-out in the form of a statement.

SP 06

Roadrunner

Program type: Arcade
Author: C. D. Harden & R. Blundell

Sadly for loony tune fans, this program does not feature Wily Coyote but a car. The object is to drive your car, the Wally ZX, for 500 miles in a time trial, avoiding obstacles and the suicidal drivers who have entered the event.

SP 07

Poker

Program type: Card simulation
Author: Simon Chivers

This well-produced program plays the full game of draw poker and gives you £100 with which to start. Caution and plenty of luck may give you the satisfaction of winning and if you lose your lucky streak the computer, like the best casinos, will allow you to borrow money.

The Grid

Program type: Arcade
Author: Graham Creasey

Set at the heart of the central processing unit which has been corrupted by images of the past and which is now protected by deadly hypertron-powered destruction machines, the objective is to escape to the outside world. To do so you have to battle through the 50 grids – very tiring but compulsive.

SP 08

The Elmir

Program type: Adventure
Author: Tycho Lamerigts

This is a machine code fantasy adventure. There are more than 90 locations, each with plenty of problems to solve. Some of the problems prove easy to solve but the fact that the game is played against the clock presents a real challenge.

Microcity

Program type: Board game simulation
Author: Mark Henry

Microcity is Monopoly for the computer. All the features of the original game are included – gaol, chance and community chest, as well as houses, hotels, mortgaging and so on. The game can be played by up to four people and the computer will play as many roles as you wish.

SP 09

HAL

Program type: Programming utility
Author: Jonathan Dye

Hal is a new language for the Spectrum 48K. Once compiled, *Hal* programs can be used as extensions to your Basic programs by including LOAD, CODE and RANDOMIZE USR instructions.

Surround

Program type: Two-player arcade
Author: Norwegian Software Design

A two-player version of the classic game *Surround*. Written entirely in machine code, the action is fast. Each player controls a roving point leaving behind a destructive light trail.

SPECTRUM

SP 10

Potty Postman

Program type: Arcade
Author: Mark Jones

You must guide Paul the *Potty Postman* round terror lane to complete your round and save his job. Various pests, such as aliens, trees and man-eating radios, hinder your task, as well as the inevitable dog, Gnashalot.

Databank

Program type: Business/Home use
Author: Christopher Lewis

This databank program can hold up to 55 pages of information, with each page able to hold up to 500 characters. It also includes all the necessary facilities to create, edit, save and load the fully-indexed pages.

SP 11

Paracopter

Program type: Shoot-'em-up
Author: Alistair Webb

In charge of the last anti-aircraft gun, your task is to shoot down enemy helicopters and paratroopers trying to invade the country. Ninety-nine levels of action lie between you and victory, so only the best survive.

Balthazar Adventure

Program type: Text adventure
Author: Alex Andrews

You play the role of the kindly King Balthazar, who has been deposed and is in gaol. Your objective is to escape and recover your riches. The humorous dialogue makes the game highly enjoyable and the Quill database means that responses are very fast.

SP 12

Tunnel of Love

Program type: Arcade
Author: James Brown

In this psychedelic rollercoaster ride you have to control a ship travelling down a multi-coloured tunnel and prevent it crashing into the side, a task which proves more difficult than you expect.

Jackpot

Program type: Simulation
Author: Andy Barrow

This version of the famous one-arm bandit game has all the features of the real thing, such as screen displays showing winning lines, the spinning reels and your total winnings or losses.

SP 13

One Arm Bandit

Program type: Simulation
Author: Bruce Gant

Another fruit machine simulation for the Spectrum, this program includes features such as nudge, hold and the choice to gamble your winnings.

Fighting Forces

Program type: Strategy
Author: Lars Christensen

This two-player war simulation game puts you in command of an army. Set on an island divided by a river, the objective is to capture your opponents' flag. Positions can be saved, permitting you to return to the game when you wish.

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Transplant surgery – a great success

Richard Sargent takes us through the delicate procedures involved in the transfer of Basic and data programs from Spectrum to Amstrad.



Spectrum owners who find the memory and storage of their machines too limiting are likely to turn to one of the Amstrad micros as a replacement computer. With Spectrums, especially the rubber-key variety, having little or no second-hand value, the machine upgrade will probably result in there being two computers in the house.

Would it not be useful if data and Basic programs could be transferred from the Spectrum to the Amstrad, thus obviating the need to type thousands of characters into the Amstrad? The programs with this article will do that. Anything which a Spectrum can normally LPRINT or LLIST can be sent via cassette tape to an Amstrad. The Spectrum can be an old 48K machine, a Spectrum +, a Spectrum 128 or the new Spectrum 128+2; the Amstrad can be a CPC464, CPC664 or CPC6128 and although it is more convenient to use the Amstrad disc system, a tape-only CPC464 system can be used if necessary.

Four programs are involved. At the Spectrum end, a single machine code program resides in high memory and provides the code for a special SAVE routine. The routine re-routes LPRINTs or LLISTs automatically to the cassette, writing the data in a way which can be read easily by the Amstrad. The other three programs fit into the Amstrad.

One is a machine-code LOAD routine based, naturally enough, on the Spectrum LOAD routine, which is explained expertly in Logan and O'Hara's book *The Complete Spectrum ROM Disassembly.* This routine is handled by a Basic program, either program three or program four, depending on the size of the file being transferred. The machine code should be left severely alone. No knowledge of Z-80 machine code is needed to run the transfer program but the Basic program can be tinkered with and modified to meet individual needs.

There has to be a catch to all this, or course, and I suppose I should mention it now before anyone shouts "computer compatibility" and rushes to buy two CPC6128s. The programs are called File Transfer programs – note well the word is transfer, not translate. To put it bluntly, although the programs are guaranteed to move a Basic program from one machine to another, it is only the simple varieties of program which RUN immediately in the new machine.

Amstrad Basic is not Spectrum Basic and there are one-hundred-and-one things in Spectrum Basic to trip an unsuspecting Amstrad into syntax error. Translation, where necessary, is achieved at the Amstrad end of the system by human intervention. Two methods are possible. If the Amstrad has no word processor fitted, you must LIST the Basic program and make the necessary changes using copy-cursor editing. That is faster than any editing you will have done on the Spectrum but still leaves much to be desired.

Loading the Basic program into a word processor such as the Arnor *Protext* is the second option, allowing fast alterations to be made with the global replace command. Programs which use fancy graphics will take some time to translate, whereas programs containing large proportions of ASCII text and ASCII data – such as an index of a record collection or an adventure game – should be easy to translate, especially once the differences between the eccentric Spectrum string slicing and the more normal RIGHT$ LEFT$ of the Amstrad are appreciated. Programs using extensive PEEKs and POKEs are probably not worth translating.

Spectrum program

The transfer requires an ASCII format of the Spectrum program, as opposed to an internal tokenised format to be recorded on tape. That is achieved by diverting the flow of ASCII bytes which normally would go to a printer after a LLIST command. Most Spectrum programs can be transferred in one session but particularly long ones will have be split and transferred in two halves. That may seem strange since, at first sight,

both micros appear to have about the same amount of user RAM available for Basic programs – about 37,000 bytes.

The Spectrum Basic program, however, is compacted when it is resident in RAM and expands when LISTed. For example, the keyword RANDOMIZE is a one-byte token in RAM and a nine-byte character when LISTed. On the other hand, Spectrum numbers occupy less space when listed, shedding six bytes for every number. The transfer program is responsible for some further expansion. A block-graphic or user-defined shape occupies one byte in RAM but is transferred to the Amstrad as a three-digit code in brackets e.g., [131] thus gaining four bytes in the process.

Machine code

To LLIST a program on to a cassette it is necessary to store all or part of the listing in a RAM buffer, since LLISTing directly to cassette, byte by byte, is not possible. The machine code program – listing one – occupies high memory, F000H to F1DF to be exact, and the Basic program is allowed to fill the remaining memory.

Priming the machine code is achieved by RANDOMIZE USR 61440 and the routine will lie dormant until a LLIST or a LPRINT command is given. There is no requirement to run the Basic program, so the Spectrum video RAM (VRAM) at 4000H to 5B00H can be used as a 6.75K buffer to store the output diverted from the printer. Thus the Basic is LLISTed to VRAM.

When the LLIST has finished or when the VRAM is full, whichever occurs first, the valid program segment in the VRAM is sent to the cassette tape as a binary file. Note that, although the binary SAVE is used, the material being saved is purely textual in nature. If the LLISTing has not finished, the VRAM will be cleared and more program lines will be sent there to be saved as a second program segment and so on.

The entire process can be seen in action and will consist of screen-creation/screen-save sequences. Either keep watch and count how many SAVEs have been made or, after the LLIST has finished, implement PRINT PEEK(61506)–64 to find how many program segments have been put on the tape. The figure will be between 1 and 5 depending on the size of the program LLISTed.

What the screen shows while the LLIST is in action defies description – it looks remarkably like a fatal machine crash but do not be fooled – real English words and numbers are steadily filling the video RAM.

RANDOMIZE USR 61490 restores LLIST and LPRINT to their normal action. The tape cannot be verified but it can be played back into the Spectrum without corrupting any bytes and it is essential to do that since any bad recording will be revealed in the form of a "tape loading error" message. Each segment has a different file name – the first is A, the second B and so on – so LOAD "A"CODE will load the first program segment back on to the screen.

Now is the time to take the transfer tape and put it into a nearby Amstrad datacorder. Do not forget you are only one-third of the way towards achieving a working Amstrad program. Two transfer programs need to be in the Amstrad. The machine code – listing two – should be a &8000 which, believe it or not, is considered "high" memory on disc-based Amstrads. A Basic control program – listing three – should be resident in low memory.

Run the Basic program. The Amstrad will ask "How many segments are you loading?" and "What name do you wish to give the transferred program?" Let us assume two segments are to be loaded and the name chosen is "AM1.ASC" Two segments will fit into the remaining user RAM – a third, fourth or fifth

```
100 REM Spectrum - Amstrad transfer
110 REM Listing One (for Spectrum)
120 CLEAR 61439: RESTORE 500
130 LET a= 61440: LET d=499
140 LET s=0: LET d=d+1
150 FOR r=1 TO 8
160 READ v
170 LET s=s+v: POKE a,v: LET a=a+1
180 NEXT r
190 READ chk: IF chk<>s THEN  PRINT "DA
    TA line ";d;" is not correct": STOP
200 IF a>61919 THEN  GO TO 300
210 GO TO 140
300 PRINT "m/c now loaded"
310 PRINT "Saving to tape..."
320 SAVE "transfer"CODE 61440,488: STOP
500 DATA 42,79,92,17,15,0,25,94,364
501 DATA 35,86,0,0,0,0,17,37,175
502 DATA 241,43,115,35,114,221,33,82,884
503 DATA 240,221,54,0,0,221,54,1,791
504 DATA 0,221,54,2,0,221,54,3,555
505 DATA 255,221,54,4,63,221,54,240,1112
506 DATA 64,201,42,79,92,17,15,0,510
507 DATA 25,237,91,87,240,115,35,114,944
508 DATA 201,3,64,32,32,32,32,32,428
509 DATA 32,32,32,32,210,1,0,64,403
510 DATA 0,0,1,0,0,147,65,244,457
511 DATA 9,254,1,18,0,174,16,39,511
512 DATA 232,3,100,0,10,0,1,0,346
513 DATA 0,0,0,0,0,197,58,66,321
514 DATA 240,60,50,66,240,221,33,82,992
515 DATA 240,221,115,250,221,114,251,221,1633
516 DATA 33,65,240,213,17,17,0,175,760
517 DATA 205,194,4,209,6,50,118,16,802
518 DATA 253,221,33,0,64,62,255,205,1093
519 DATA 194,4,193,201,197,33,0,64,886
520 DATA 54,13,17,1,64,1,255,26,431
521 DATA 237,176,193,201,229,213,197,79,1525
522 DATA 58,82,240,254,0,32,8,205,879
523 DATA 156,240,62,1,50,82,240,58,889
524 DATA 83,240,254,1,40,54,42,85,799
525 DATA 240,35,34,85,240,124,254,91,1103
526 DATA 32,20,125,254,0,32,15,17,495
527 DATA 0,27,205,109,240,205,156,240,1182
528 DATA 33,0,64,34,85,240,121,254,831
529 DATA 127,40,54,119,58,84,240,254,976
530 DATA 1,40,20,121,254,127,40,8,611
531 DATA 175,50,84,240,193,209,225,201,1377
532 DATA 62,1,50,84,240,24,245,121,827
533 DATA 254,88,32,231,17,255,63,237,1177
534 DATA 82,235,205,109,240,62,1,50,984
535 DATA 83,240,6,24,205,68,14,24,664
536 DATA 219,62,99,24,198,245,254,13,1114
537 DATA 40,86,254,32,56,8,254,128,858
538 DATA 56,78,254,165,48,74,71,58,804
539 DATA 92,240,183,120,32,61,38,0,766
540 DATA 111,17,104,240,221,33,94,240,1060
541 DATA 62,47,221,78,0,221,70,1,700
542 DATA 198,1,237,66,48,250,9,18,827
543 DATA 221,35,221,35,19,13,32,232,808
544 DATA 62,91,205,152,241,58,106,240,1155
545 DATA 205,152,241,58,107,240,205,152,1360
546 DATA 241,58,108,240,205,152,241,62,1307
547 DATA 93,24,24,58,93,240,24,19,575
548 DATA 254,255,40,8,254,165,56,11,1043
549 DATA 254,255,48,7,214,165,205,95,1243
550 DATA 11,241,201,205,152,241,241,201,1493
551 DATA 229,111,58,89,240,60,103,58,948
552 DATA 91,240,60,50,91,240,188,32,992
553 DATA 14,205,198,241,175,50,91,240,1214
554 DATA 125,254,13,40,15,24,227,125,823
555 DATA 254,13,32,5,175,50,91,240,860
556 DATA 125,205,204,241,225,201,62,13,1276
557 DATA 205,204,241,201,245,205,172,240,1713
558 DATA 254,13,32,10,58,90,240,32,729
559 DATA 5,62,10,205,172,240,241,201,1136
560 DATA 0,0,0,0,0,0,0,0,0
```

Continued on page 66

```
100 ' LISTING 2 ; M/C LOADER (AMSTRAD)
110 MEMORY &3FFF:RESTORE 500
120 A=&8000:D=499
130 S=0:D=D+1
140 FOR R=1 TO 8
150 READ V$:V=VAL("&"+V$)
160 S=S+V:POKE A,V:A=A+1
170 NEXT R
180 READ V$:CHK=VAL("&"+V$)
190 IF CHK<>S THEN GOTO 220
200 IF A>&812F THEN STOP
210 GOTO 130
220 PRINT "DATA line";D;" is wrong"
230 STOP
500 DATA CD,09,80,C9,00,40,00,00,025F
501 DATA 00,CD,A7,BC,CD,6E,BC,F3,051A
502 DATA AF,32,06,80,08,D9,F5,D5,0412
503 DATA 16,10,D9,01,0E,F4,ED,49,0338
504 DATA 01,D0,F6,ED,49,0E,10,ED,0408
505 DATA 49,01,92,F7,ED,49,01,58,0362
506 DATA F6,ED,49,DD,21,2B,81,DD,04B3
507 DATA E5,11,11,00,AF,CD,7F,80,0382
508 DATA DD,E1,30,EF,3A,2B,81,FE,04C1
509 DATA 03,20,E8,3E,FF,ED,5B,36,03C6
510 DATA 81,ED,53,07,80,DD,2A,04,0353
511 DATA 80,CD,7F,80,08,D9,D1,F1,04EF
512 DATA D9,08,01,82,F7,ED,49,01,0392
513 DATA 10,F6,ED,49,DD,22,04,80,03BF
514 DATA FB,F5,CD,71,BC,F1,38,01,0514
515 DATA C9,3E,01,32,06,80,C9,14,029D
516 DATA 08,15,3E,F5,DB,00,E6,80,0391
517 DATA D9,1E,4C,D9,4F,BF,C0,CD,04B7
518 DATA 02,81,30,FA,21,15,04,10,01F7
519 DATA FE,2B,7C,B5,20,F9,CD,FE,053E
520 DATA 80,30,EB,06,9C,CD,FE,80,0488
521 DATA 30,E4,3E,C0,B8,30,E0,24,03FE
522 DATA 20,F1,06,C9,CD,02,81,30,0360
523 DATA D5,78,FE,D4,30,F4,CD,02,0512
524 DATA 81,D0,D9,1E,4A,D9,26,00,0391
525 DATA 06,B0,18,18,08,20,05,DD,01F0
526 DATA 75,00,18,0A,CB,19,AD,C0,02E8
527 DATA 79,17,4F,13,18,02,DD,23,020C
528 DATA 1B,08,06,B2,2E,01,CD,FE,02D5
529 DATA 80,D0,3E,BF,B8,CB,15,06,03EB
530 DATA B0,30,F3,7C,AD,67,7A,B3,0490
531 DATA 20,D2,7C,FE,01,C9,CD,02,0405
532 DATA 81,D0,3E,16,3D,20,FD,A7,03A6
533 DATA 04,C8,3E,F4,DB,00,E6,04,03C3
534 DATA EE,04,C0,3E,F5,DB,00,A9,0469
535 DATA E6,80,28,EC,79,2F,4F,D9,044A
536 DATA 7B,EE,1F,5F,ED,51,ED,59,046B
537 DATA D9,37,C9,00,00,00,00,00,01D9
```



segment will overfill the user RAM and so 3/4/5-segment loads still need to be handled by an alternative Basic control program – listing four. Since two-segment loads are simple, over-fill is a problem to be dealt with later.

The first segment loads from &4000 onwards and, because it is an entire Spectrum screenful – 1B00H bytes – will fill the Amstrad RAM up to &5AFF. The second segment will start loading at &5B00 and continue until the transfer is complete. If, by chance, this final segment also happened to be exactly a Spectrum screenful, the RAM end address would be &75FF. The control program knows how much RAM has been used because it reads the segment length from the tape header during the loading process.

Notice that segment B has now been concatenated with segment A. The control program then proceeds to write the relevant RAM contents to disc or tape as an ASCII file. That is done in Basic and so disc users will notice an uncharacteristic delay while a FOR-NEXT loop is repeated some 16,000 times. If only Amstrad had

```
100 REM LISTING 3 -- BASIC CONTROL PROGRAM (AMSTRAD END)
110 |DISC:|NOKEYS::BORDER 13:INK 0,23:INK 1,0:INK 2,0:INK 3,11
120 KEY 9,CHR$(174):MODE 2:MEMORY &3FFF:LOAD "zx.bin":|TAPE.IN
130 POKE &8004,0:POKE &8005,&40 : '&4000 IS DESTINATION
140 TL=0:S=1:INPUT "HOW MANY SEGMENTS ";N
150 PRINT "SUPPLY A NAME FOR THE TRANSFEREDED FILE"
160 PRINT "THE NAME SHOULD NOT HAVE ANY EXTENSION"
170 INPUT "NAME ";A$:A$=UPPER$(A$):A$=A$+".ASC":PRINT
180 PRINT "SET CASSETTE TO PLAY":PRINT
190 :
200 FOR R=1 TO N
210 PRINT "LOADING SEGMENT";S;" FROM SPECTRUM TAPE":CALL &8000
220 F=PEEK(&8006):IF F=0 THEN PRINT "FAULTY LOAD":STOP
230 L=((PEEK(&8008))*256)+PEEK(&8007):TL=TL+L
240 PRINT "LENGTH OF SEGMENT";S;"LOADED TO RAM WAS ";HEX$(L,4);"H"
250 S=S+1:PRINT:NEXT R
260 :
270 PRINT "PRESS ANY KEY WHEN DISC (OR TAPE) IS READY TO ACC
280 PRINT "FILE ";A$
290 IF INKEY$="" THEN GOTO 290
300 PRINT:PRINT "SAVING -- PLEASE WAIT":OPENOUT A$
310 FOR A=&4000 TO &4000+TL-3
320 V$=CHR$(PEEK(A)):PRINT #9,V$;:NEXT A     330 CLOSEOUT:|DISC:STOP
```

produced its disc-firmware guide in time I could have written the ASCII SAVE in machine code. Tape users will not be aware of any extra delay, since saving 16,000 bytes to tape takes so long anyway.

The file "AM1.ASC" can now be loaded into Protext – ROM version – and edited. After editing, SAVE the new file as "AM1.EDT" and LOAD "AM1.EDT" into Basic. Alternatively, the Basic command LOAD "AM1.ASC" can be given to bring the file directly into Amstrad Basic and you must do that if you have no suitable word processor. In either case MEMORY should be set to &7FFF or an "out of memory" error message will be thrown up – the control program leaves MEMORY set to &3FFF.

If the LOAD is successful, editing can start. The load will fail if the Amstrad is presented with a Basic line more than 255 characters long. That, fortunately, is a rare event – the solution to the problem will be given next month.

This article will be concluded in next month's issue of *Your Computer.*

```
100 REM LISTING 4 -- ALTERNATIVE PROGRAM (AMSTRAD END)
110 :DISC::NOKEYS::BORDER 13:INK 0,23:INK 1,0:INK 2,0:INK 3,11
120 KEY 9,CHR$(174):MODE 2:MEMORY &3FFF:LOAD "zx.bin":|TAPE.IN
130 INPUT "HOW MANY SEGMENTS ";N:T=64:S=1
140 PRINT "SUPPLY A FILE NAME (6 OR LESS CHARACTERS)"
150 PRINT "THE NAME SHOULD NOT HAVE ANY EXTENSION"
160 INPUT "NAME ";A$:A$=UPPER$(A$):CLS
170 IF LEN(A$)>6 THEN A$=LEFT$(A$,6)
180 :
190 FOR R=1 TO N:CLS
200 PRINT "PUT SOURCE TAPE IN DATACORDER (PLAYBACK)"
210 PRINT "PRESS ANY KEY TO CONTINUE"
220 IF INKEY$="" THEN GOTO 220
230 POKE &8004,0:POKE &8005,&40:T=T+1
240 PRINT "LOADING SEGMENT";S;"FROM SPECTRUM TAPE"
250 CALL &8000:F=PEEK(&8006):IF F=0 THEN PRINT "FAULTY LOAD":STOP
260 L=((PEEK(&8008))*256)+PEEK(&8007):B$=A$+"-"+CHR$(T)+".ASC"
270 S=S+1:PRINT "CHANGE TAPE IF SAVING TO TAPE (RECORD)"
280 PRINT "PRESS ANY KEY TO SAVE FILE <<";B$;">>"
290 IF INKEY$="" THEN GOTO 290
300 PRINT:PRINT "SAVING -- PLEASE WAIT":OPENOUT B$
310 FOR A=&4000 TO &4000+L-2
320 V$=CHR$(PEEK(A)):PRINT £9,V$;:NEXT A
330 CLOSEOUT:NEXT R
340 |DISC:STOP
```

GOLF

◆ Spectrum ● Marcus Jenks and Andrew Radford

This *Golf* simulation game is extremely well-written and highly-playable. Budding golfers will have no difficulty playing the game as the rules are the same as in the proper game. For those unfamiliar with golf, the object of the game is straightforward, to complete the nine-hole course in the least number of strokes.

Using six keys, each player can control the direction and velocity of the ball and the type of club to be used. Each of the nine holes is different and the degree of difficulty increases as you progress through the course. The game can be played by up to four players, which generates an element of competition, as lunch-times in our offices testify.

```
   0 REM ©1985 M.JENKS A.RADFORD
   2 POKE 23756,0
   3 LET CR=32
   5 INK 7: PAPER 0: CLS : PRINT
 AT 1,2;"GOLF BY M JENKS & A RAD
FORD""               KEYS"""""
CLOCK WISE ..............U"""" ANT
I CLOCK WISE  ......Q""""  POWER
INCREASE  .......P""""  POWER DEC
REACE  .......O""""  CLUB  .......
..........C""""  FIRE BALL  ....
.......0
   7 PRINT #0;"     PRESS ANY KE
Y TO PLAY               JENKSFOR
D GOLF": PAUSE 0: BORDER 7: INK
0: PAPER 7: CLS
  10 POKE 23561,10: POKE 23562,1
: POKE 23609,50: POKE 23658,8
  11 LET HOLE=0: LET PX=30: LET P
Y=145
  15 FOR C=USR "A" TO USR "A"+7:
 READ G: POKE C,G: NEXT C
  20 LET K=0: LET PX1=30: LET PY
1=145: LET H=10: LET T=0: LET SC
ORE=0: LET G=0: LET W=0: LET E=0
: LET F=0: LET AR=1: LET G2=0: L
ET G=0: LET SETUP=1000: LET HOLE
=1: LET ANGLE=0: LET STRENGTH=1:
 LET CLUB=1
  30 DIM P(9): DIM A(9): DIM B(9
): DIM C(9): DIM D(9)
  40 FOR C=1 TO 9: READ P(C): NE
XT C
  50 INPUT "NUMBER OF PLAYERS (4
)";N
  55 IF N>4 THEN GO TO 50
  90 FOR Z=1 TO N: BORDER 4: BRI
GHT 1: PAPER 4: CLS
 100
 110 GO SUB SETUP
 115 PLOT FX,FY: DRAW 0,7: DRAW
3,-2: DRAW -3,-2
 120 IF INKEY$="Q" THEN BEEP .00
1,35: PLOT 15,160: DRAW INVERSE
1;9*SIN ANGLE,9*COS ANGLE: LET A
NGLE=ANGLE-.1: PLOT 15,160: DRAW
 9*SIN ANGLE,9*COS ANGLE: GO TO
120
 130 IF INKEY$="U" THEN BEEP .00
1,35: PLOT 15,160: DRAW INVERSE
1;9*SIN ANGLE,9*COS ANGLE: LET A
NGLE=ANGLE+.1: PLOT 15,160: DRAW
 9*SIN ANGLE,9*COS ANGLE: GO TO
130
 140 IF INKEY$="P" AND STRENGTH<
25 THEN BEEP .01,60: LET STRENGT
H=STRENGTH+1: PLOT 169+STRENGTH,
164: GO TO 140
 145 IF INKEY$="O" AND STRENGTH>
1 THEN BEEP .01,60: PLOT INVERSE
 1;169+STRENGTH,164: LET STRENGT
H=STRENGTH-1: GO TO 145
 150 IF INKEY$="C" THEN BEEP .05
,35: PRINT AT 1,CLUB+4; OVER 1;
INVERSE 1;" ": LET CLUB=CLUB+1:
IF CLUB<14 THEN PRINT AT 1,CLUB+
4; OVER 1;"■"
 155 PRINT #0;AT 0,0;"  PAR  ";P
(AR);"   SCORE ";SCORE;"   PLAYER
 ";Z
 160 IF CLUB>13 THEN LET CLUB=1:
 PRINT AT 1,CLUB+4; OVER 1;"■"
 169 LET J=ATTR (21-INT (PY/8),I
NT (PX/8))
 170 IF INKEY$="0" THEN PLOT OVE
R 1;PX,PY: POKE 22528+32*(21-INT
 (PY/8))+INT (PX/8),J: GO TO 200
 180 GO TO 120
 200 LET S=CLUB-4: LET ST=(STREN
GTH/2+CLUB)
 209 IF G=1 THEN LET H=2
 210 FOR C=1 TO ST STEP H
 211 LET PX1=INT (C*SIN ANGLE+PX
): LET PY1=INT (C*COS ANGLE+PY)
 212 IF PX1>247 THEN LET PX1=246
: LET SCORE=SCORE+1: GO TO 250
 213 IF PY1<8 THEN LET PY1=9: LE
T SCORE=SCORE+1: GO TO 250
 214 IF PY1>145 THEN LET PY1=144
: LET SCORE=SCORE+1: GO TO 250
 215 IF PX1<8 THEN LET PX1=9: LE
T SCORE=SCORE+1: GO TO 250
 216 IF G=1 AND PX1>124 AND PX1<
130 AND PY1>73 AND PY1<80 THEN L
ET SCORE=SCORE+1: GO SUB 8000: N
EXT Z: GO TO 9000
 220 LET J=ATTR (21-INT (PY1/8),
INT (PX1/8)): PLOT OVER 1;PX1,PY
1
 221 REM POKE 22528+32*(21-INT (
PY1/8))+INT (PX1/8),J
 222 LET K=22528+32*(21-INT (PY1
/8))+INT (PX1/8): POKE K,J
 230 BEEP .01,C/5: PLOT OVER 1;P
X1,PY1: POKE K,J
 240 NEXT C
 250 LET PX=PX1: LET PY=PY1
 260 PLOT OVER 1;PX,PY
 261 POKE K,J
 265 IF G<>1 THEN GO SUB 1400+(1
00*HOLE)+50
 270 LET SCORE=SCORE+1
 275 IF G2=1 THEN RETURN
 280 IF PX>FX-10 AND PX<FX+10 AN
D PY>FY-10 AND PY<FY+10 THEN GO
TO 500
 290 BEEP .5,0: BEEP .7,-12: GO
TO 120
 500 PRINT AT 10,7;"YOU ARE ON T
HE GREEN": PAUSE 300: PAUSE 100:
 LET G=1: CLS
 510 GO SUB SETUP
 520 PRINT AT 1,28; INVERSE 1;HO
LE: LET STRENGTH=1
 530 PRINT AT 1,5;"PUTTER": LET
CLUB=3
 540 CIRCLE 127,77,60: CIRCLE 12
7,77,2
 550 LET X1=FX-PX: LET Y1=FY-PY
 570 PLOT (-X1*6)+127,(-Y1*6)+77
 580 LET PX=(-X1*6)+127: LET PY=
(-Y1*6)+77
 590 IF INKEY$="Q" THEN BEEP .01
,35: PLOT 15,160: DRAW INVERSE 1
;9*SIN ANGLE,9*COS ANGLE: LET AN
GLE=ANGLE-.1: PLOT 15,160: DRAW
9*SIN ANGLE,9*COS ANGLE: GO TO 5
90
 600 IF INKEY$="U" THEN BEEP .01
,35: PLOT 15,160: DRAW INVERSE 1
;9*SIN ANGLE,9*COS ANGLE: LET AN
GLE=ANGLE+.1: PLOT 15,160: DRAW
9*SIN ANGLE,9*COS ANGLE: GO TO 6
00
 610 IF INKEY$="P" AND STRENGTH<
25 THEN BEEP .01,60: LET STRENGT
H=STRENGTH+1: PLOT 169+STRENGTH,
164: GO TO 610
 620 IF INKEY$="O" AND STRENGTH>
1 THEN BEEP .01,60: PLOT INVERSE
 1;169+STRENGTH,164: LET STRENGT
H=STRENGTH-1: GO TO 620
 630 IF INKEY$="0" THEN PLOT INV
ERSE 1;PX,PY: LET G2=1: GO SUB 2
00
 635 PRINT #0;AT 0,0;"  PAR  ";P
(AR);"   SCORE ";SCORE;"   PLAYER
 ";Z
 640 IF PX>126 AND PX<129 AND PY
<79 AND PY>75 THEN GO SUB 8000:
NEXT Z: GO TO 9000
 650 GO TO 590
 999 STOP
1000
1010 REM SETUP
1015 BORDER 4: BRIGHT 1: PAPER 4
: CLS
1020 PRINT AT 4,31; INK 2;"♣": F
OR C=5 TO 21: PRINT AT C,0; INK
2;"♣";AT C,31;"♣": NEXT C: FOR C
=6 TO 31: PRINT AT 3,C; INK 2;"♣
";AT 21,C;"♣": NEXT C: PRINT AT
21,0; INK 2;"♣♣♣♣♣♣♣♣": PLOT 0,17
5: DRAW 30,0: DRAW 0,-30: DRAW -
30,0: DRAW 0,30: PLOT 30,175: DR
AW 225,0: DRAW 0,-20: DRAW -225,
0
1030 CIRCLE 15,160,11
1035 CIRCLE 30,145,2
1040 PLOT 15,160: DRAW 9*SIN ANG
LE,9*COS ANGLE
1050 FOR C=50 TO 75 STEP 3: PLOT
 C+120,165: DRAW 0,3: NEXT C: PL
OT 170,164
1055 IF G=1 THEN RETURN
1060 PRINT AT 1,5;"P987654321531
"
1070 PRINT AT 1,CLUB+4; OVER 1;
INVERSE 1;" "
1080 PRINT AT 1,28; INVERSE 1;HO
LE
1090 GO SUB 1400+(HOLE*100)
1100 RETURN
1500 LET FX=200: LET FY=25
1510 CIRCLE FX,FY,10
1520 PLOT 30,155: DRAW 130,-100:
 DRAW 70,0: DRAW 20,-20: DRAW -2
0,-20: DRAW -100,0: DRAW -130,13
0
1530 INK 5: FOR C=1 TO 7: PLOT 1
60,47-C: DRAW 60,0: NEXT C: INK
0
1540 RETURN
1550 IF PX>160 AND PX<220 AND PY
>40 AND PY<47 THEN LET SCORE=SCO
RE+2
1560 RETURN
1600 LET FX=150: LET FY=50
1610 CIRCLE FX,FY,10
1620 PLOT 30,155: DRAW 150,-100:
 DRAW 15,-25: DRAW -50,-15: DRAW
 -145,130
1630 INK 6: FOR C=27 TO 34: PLOT
 137,C: DRAW 30,0: NEXT C: INK 0
1640 RETURN
1650 IF PX>137 AND PX<167 AND PY
>27 AND PY<34 THEN LET SCORE=SCO
RE+2
1660 RETURN
1700 LET FX=220: LET FY=30
1710 CIRCLE FX,FY,10
1720 PLOT 30,155: DRAW 30,-100:
DRAW 180,-10: DRAW 0,-25: DRAW -
10,-10: DRAW -190,10: DRAW -40,1
25
1730 BRIGHT 0: INK 5: FOR C=70 T
O 130: PLOT 70,C: DRAW 170,0: NE
XT C: BRIGHT 1: INK 6: FOR C=1 T
O 40: PLOT 8,8+C: DRAW 15,0: NEX
T C: FOR C=20 TO 30: PLOT 150,C:
 DRAW 30,0: NEXT C: INK 0:
1740 RETURN
1750 IF PX>70 AND PX<240 AND PY>
70 AND PY<120 THEN LET PX=30: LE
T PY=145: FOR L=1 TO 5: BEEP .1,
L: NEXT L: GO SUB 1730
1760 IF PX>8 AND PX<23 AND PY>8
AND PY<48 THEN LET SCORE=SCORE+2
1770 IF PX>150 AND PX<180 AND PY
>20 AND PY<30 THEN LET SCORE=SCO
RE+2
1780 RETURN
1800 LET FX=220: LET FY=120
1810 CIRCLE FX,FY,10
1820 PLOT 30,155: DRAW 70,-100:
DRAW 120,80: DRAW 20,0: DRAW 0,-
30: DRAW -160,-90: DRAW -50,130
1830 INK 5: FOR C=110 TO 142: PL
OT 80,C: DRAW 80,0: NEXT C: FOR
C=130 TO 142: PLOT 160,C: DRAW 4
0,0: NEXT C: FOR C=80 TO 110: PL
OT 100,C: DRAW 30,0: NEXT C: INK
 6: FOR C=8 TO 60: PLOT 8,C: DRA
W 30,0: NEXT C: FOR C=50 TO 80:
PLOT 210,C: DRAW 30,0: NEXT C: I
NK 0
1840 RETURN
1850 IF PX>80 AND PX<160 AND PY>
110 AND PY<142 THEN LET PX=30: L
ET PY=145: FOR L=1 TO 5: BEEP .1
,L: NEXT L: GO SUB 1830
1851 IF PX>160 AND PX<200 AND PY
>130 AND PY<142 THEN LET PX=30:
LET PY=145: FOR L=1 TO 5: BEEP .
1,L: NEXT L: GO SUB 1830
1852 IF PX>100 AND PX<130 AND PY
>80 AND PY<110 THEN LET PX=30: L
ET PY=145: FOR L=1 TO 5: BEEP .1
,L: NEXT L: GO SUB 1830
1853 IF PX>8 AND PX<38 AND PY>8
AND PY<60 THEN LET SCORE=SCORE+2
1854 IF PX>210 AND PX<240 AND PY
>50 AND PY<80 THEN LET SCORE=SCO
RE+2
1860 RETURN
1900 LET FX=70: LET FY=100
1910 CIRCLE FX,FY,10
1920 PLOT 30,155: DRAW 60,-40: D
RAW 0,-30: DRAW -30,0: DRAW -60,
60
1930 INK 6: FOR C=30 TO 125: PLO
T 98,C: DRAW 60,0: NEXT C: FOR C
=30 TO 79: PLOT 50,C: DRAW 60,0:
 NEXT C: INK 0
1940 RETURN
1950 IF PX>98 AND PX<128 AND PY>
55 AND PY<120 THEN LET SCORE=SCO
RE+2
1960 IF PX>55 AND PX<100 AND PY>
55 AND PY<79 THEN LET SCORE=SCOR
```

```
E+2
1970 RETURN
2000 LET FX=50: LET FY=30
2010 CIRCLE FX,FY,10
2020 PLOT 30,155: DRAW 10,-10: D
RAW 200,-30: DRAW -190,-105: DRA
W -20,20: DRAW 20,30: DRAW 110,3
5: DRAW -150,40: DRAW -10,10
2030 INK 5: FOR C=75 TO 110: PLO
T 8,C: DRAW 70,0: NEXT C: FOR C=
50 TO 75: PLOT 8,C: DRAW 30,0: N
EXT C: FOR C=8 TO 55: PLOT 150,C
: DRAW 30,0: NEXT C: INK 0
2031 INK 6: FOR C=43 TO 55: PLOT
 50,C: DRAW 20,0: NEXT C: INK 0
2032 INK 5: FOR C=8 TO 20: PLOT
30,C: DRAW 70,0: NEXT C: INK 0
2040 RETURN
2050 IF PX>8 AND PX<78 AND PY>75
 AND PY<110 THEN LET PX=30: LET
PY=145: FOR L=1 TO 5: BEEP .1,L:
 NEXT L: GO SUB 2030
2051 IF PX>50 AND PX<80 AND PY>4
3 AND PY<55 THEN LET PX=30: LET
PY=145: FOR L=1 TO 5: BEEP .1,L:
 NEXT L: GO SUB 2030
2052 IF PX>80 AND PX<150 AND PY>
43 AND PY<55 THEN LET PX=30: LET
 PY=145: FOR L=1 TO 5: BEEP .1,L
: NEXT L: GO SUB 2030
2060 IF PX>8 AND PX<38 AND PY>50
 AND PY<75 THEN LET SCORE=SCORE+
2
2070 IF PX>150 AND PX<230 AND PY
>8 AND PY<55 THEN LET PX=30: LET
 PY=145: FOR L=1 TO 5: BEEP .1,L
: NEXT L: GO SUB 2030
2080 RETURN
2100 LET FX=220: LET FY=40
2110 CIRCLE FX,FY,10
2120 PLOT 30,155: DRAW 20,-20: D
RAW 190,-10: DRAW 5,-100: DRAW -
40,-5: DRAW 5,80: DRAW -190,20:
DRAW -20,25
2130 INK 5: FOR C=136 TO 143: PL
OT 80,C: DRAW 150,0: NEXT C: FOR
 C=8 TO 15: PLOT 195,C: DRAW 45,
0: NEXT C: FOR C=8 TO 95: PLOT 8
,C: DRAW 190,0: NEXT C: INK 0
2140 RETURN
2150 IF PX>8 AND PX<198 AND PY>8
 AND PY<95 THEN LET PX=30: LET P
Y=145: FOR L=1 TO 5: BEEP .1,L:
NEXT L: GO SUB 2130
2151 IF PX>80 AND PX<210 AND PY>
136 AND PY<143 THEN LET PX=30: L
ET PY=145: FOR L=1 TO 5: BEEP .1
,L: NEXT L: GO SUB 2130
2152 IF PX>195 AND PX<240 AND PY
>8 AND PY<15 THEN LET PX=30: LET
 PY=145: FOR L=1 TO 5: BEEP .1,L
: NEXT L: GO SUB 2130
2160 RETURN
2200 LET FX=200: LET FY=50
2210 CIRCLE FX,FY,10
2220 PLOT 30,155: DRAW 200,-100:
 DRAW 10,-10: DRAW -10,-30: DRAW
 -200,80: DRAW -30,40
2230 INK 6: FOR C=80 TO 90: PLOT
 100,C: DRAW 40,0: NEXT C: FOR C
=33 TO 39: PLOT 210,C: DRAW 20,0
: NEXT C: INK 0
2240 RETURN
2250 IF PX>210 AND PX<230 AND PY
>33 AND PY<39 THEN LET SCORE=SCO
RE+2
2251 IF PX>100 AND PX<140 AND PY
>80 AND PY<90 THEN LET SCORE=SCO
RE+2
2260 RETURN
2300 LET FX=150: LET FY=50
2310 CIRCLE FX,FY,10
2320 PLOT 30,155: DRAW 50,-20: D
RAW 0,-80: DRAW 55,0: DRAW 0,10:
 DRAW 30,0: DRAW 0,-50: DRAW -30
,0: DRAW -80,10: DRAW -10,80: DR
AW -45,30
2330 PLOT 215,25: DRAW 30,0: DRA
W -10,10: PLOT 246,25: DRAW -10,
-10: PRINT AT 17,26;"HOME"
2331 INK 6: FOR C=8 TO 23: PLOT
100,C: DRAW 70,0: NEXT C: FOR C=
8 TO 120: PLOT 170,C: DRAW 30,0:
 NEXT C: FOR C=80 TO 120: PLOT 1
00,C: DRAW 70,0: NEXT C: INK 0
2332 INK 5: FOR C=8 TO 100: PLOT
 8,C: DRAW 30,0: NEXT C: INK 0
2333 INK 6: FOR C=40 TO 60: PLOT
 100,C: DRAW 30,0: NEXT C: INK 0
2340 RETURN
2350 IF PX>100 AND PX<170 AND PY
>8 AND PY<23 THEN LET SCORE=SCOR
E+2
2351 IF PX>170 AND PX<200 AND PY
>8 AND PY<120 THEN LET SCORE=SCO
RE+2
2352 IF PX>100 AND PX<170 AND PY
>80 AND PY<120 THEN LET SCORE=SC
ORE+2
2353 IF PX>8 AND PX<30 AND PY>8
AND PY<100 THEN LET PX=30: LET P
Y=145: FOR L=1 TO 5: BEEP .1,L:
NEXT L: GO SUB 2332
2354 IF PX>100 AND PX<130 AND PY
>40 AND PY<60 THEN LET SCORE=SCO
RE+2
2360 RETURN
8000 BEEP .5,0: BEEP .7,12
8005 IF Z=1 THEN LET A(HOLE)=SCO
RE
8010 IF Z=2 THEN LET B(HOLE)=SCO
RE
8020 IF Z=3 THEN LET C(HOLE)=SCO
RE
8030 IF Z=4 THEN LET D(HOLE)=SCO
RE
8040 LET H=10: LET SCORE=0: LET
G=0: LET G2=0: LET STRENGTH=1: L
ET CLUB=1: LET PX=30: LET PY=145
: LET ANGLE=0
8041 IF Z=N THEN CLS : PRINT AT
10,10;" SCORE CARD ": PAUSE 150:
 GO TO 8050
8045 CLS : PRINT AT 10,10;"NEXT
PLAYER..": PAUSE 0: PAUSE 0
8050 RETURN
8999 STOP
9000 LET H=10: LET SCORE=0: LET
G=0: LET G2=0: LET STRENGTH=1: L
ET CLUB=1: LET PX=30: LET PY=145
: LET ANGLE=0: LET HOLE=HOLE+1
9005 BEEP .08,0: BEEP .08,0: BEE
P .3,0: BEEP .08,4: BEEP .08,4:
BEEP .3,4: BEEP .3,7: BEEP .3,4:
 BEEP .3,7: BEEP .3,4: BEEP .3,0
: BEEP .05,0: BEEP .05,0: BEEP .
3,0: BEEP .3,0: BEEP .3,4
9010 CLS : PRINT AT 0,0;"HOLE
PAR   P1   P2   P3   P4"''': FOR
C=1 TO AR
9020 PRINT C;TAB 7;P(C);TAB 13;A
(C);TAB 18;B(C);TAB 23;C(C);TAB
28;D(C)
9030 NEXT C: FOR C=1 TO AR: LET
T=T+P(C): LET O=O+A(C): LET W=W+
B(C): LET E=E+C(C): LET R=R+D(C)
: NEXT C: PRINT "TOTAL  ";T;TAB
13;O;TAB 18;W;TAB 23;E;TAB 28;R
9040 LET AR=AR+1
9045 INPUT "HARD COPY Y/N ";Y$:
IF Y$="Y" THEN COPY
9047 INPUT "DO YOU WISH TO GO BA
CK TO THE    CLUB HOUSE (END) Y/N
 ";Y$: IF Y$="Y" THEN INPUT "DO
YOU WISH TO SAVE YOUR         PRE
SENT POSITION (Y/N) ";D$: IF D$=
"Y" THEN CLS : PRINT AT 10,12; F
LASH 1;"SAVING": SAVE "J. AND F.
 GOLF" LINE 9100: PAUSE 100: POK
E 23736,181: SAVE "UDG"CODE USR
"♠",9: CLS : PRINT AT 10,10; FLA
SH 1;"STOP THE TAPE": PAUSE 50:
FOR C=1 TO 50: BEEP .02,40: NEXT
 C: CLS : LET HCL=1: GO TO 9500
9048 IF Y$="Y" THEN LET HCL=1: G
O TO 9500
9049 POKE 23756,0: POKE 23561,10
: POKE 23562,1: POKE 23609,50: P
OKE 23658,8: IF HOLE=10 THEN GO
TO 9500
9050 LET T=0: LET O=0: LET W=0:
LET E=0: LET R=0: GO TO 90
9100 LOAD ""CODE : GO TO 9049
9500 CLS : PRINT AT 10,10;"END O
F GAME.....": IF HCL=1 THEN GO T
O 9505
9501 IF O>0 AND O<CR THEN LET CR
=O
9502 IF W>0 AND W<CR THEN LET CR
=W
9503 IF E>0 AND E<CR THEN LET CR
=E
9504 IF R>0 AND R<CR THEN LET CR
=R
9505 PRINT '' " THE COURSE RECO
RD IS ";CR: INPUT "ANOTHER GAME
Y/N ";Y$: IF Y$="N" THEN CLS : S
TOP
9510 RESTORE : GO TO 1
9980 DATA 24,60,126,126,24,24,24
,0
9990 DATA 4,3,5,4,3,4,5,3,4
9999 SAVE "J. AND F. GOLF" LINE
1: PAUSE 100: POKE 23736,181: GO
 TO 9999
```

INBETWEENER

◆ Spectrum ● Paul Rhodes

This short machine code routine produces a form of simple animation which shows a set of lines moving from one position to another. As an example of animation the program is extremely good and careful study of the listing will reveal to interested programmers how the effects can be produced on the monitor.

```
  10 PRINT "PLEASE WAIT...": RES
TORE 9000: LET x=60417
  20 READ a: IF a=-1 THEN GO TO
100
  30 POKE x,a
  40 FOR f=1 TO 7: READ a: POKE
x+f,a: NEXT f
  50 LET x=x+13: GO TO 20
 100 CLS : RESTORE 8000
 105 READ add,n,sub
 110 IF add=0 THEN PRINT AT 11,1
4;"THE";AT 12,15;"END";#0: RANDO
MIZE USR 4757
 120 POKE 60006,add-256*INT (add
/256): POKE 60007,INT (add/256):
 POKE 60004,n: GO SUB sub
 130 GO TO 105
1000 FOR c=1 TO 30 STEP 3: POKE
60005,c: RANDOMIZE USR 5e4: NEXT
 c: RETURN
1010 POKE 60005,30: RANDOMIZE US
R 5e4: RETURN
8000 DATA 60416,8,1000,60520,8,1
010,60624,4,1010,60676,2,1010,60
702,4,1010,60754,8,1010,0,0,0
9000 DATA 110,120,150,120,110,80
,110,120,150,120,150,80,110,120,
150,120,150,80,110,80,150,120,15
0,80,110,80,110,120,150,80,110,8
0
9010 DATA 130,70,100,100,100,100
,130,130,100,100,130,130,130,100
,160,100,130,130,160,100,160,100
,130,70,160,100,130,70,130,70,10
0,100
9020 DATA 110,80,150,80,130,100,
130,100,110,80,110,120,130,100,1
30,100,110,120,150,120,130,100,1
30,100,150,80,150,120,130,100,13
0,100
9030 DATA 130,70,100,100,130,100
,130,100,100,100,130,130,130,100
,130,100,130,130,160,100,130,100
,130,100,160,100,130,70,130,100,
130,100
9040 DATA 0,0,0,0,0,175,255,0,25
5,175,255,175,0,175,255,0,0,175,
0,175,0,0,255,175,255,0,255,0,0,
0,255,175
9050 DATA 0,175,255,0,128,96,128
,96,0,0,255,175,128,96,128,96
9060 DATA 112,96,144,96,112,80,1
12,112,112,96,144,96,144,112,144
,80,112,96,144,96,112,80,144,80,
112,96,144,96,112,112,144,112
9070 DATA 112,80,112,95,112,80,1
00,95,112,96,112,112,100,96,112,
112,112,80,127,80,112,80,127,68,
128,80,144,80,128,68,144,80
9080 DATA 144,80,144,95,144,80,1
58,95,144,96,144,112,158,96,144,
112,144,112,128,112,144,112,128,
124,112,112,127,112,112,112,127,
124
9100 DATA -1
9900 BORDER 0: PAPER 0: INK 7: C
LEAR 59999: LOAD ""CODE
9910 RUN
```

MICRO MARKET

FANTASMAGORICAL

◆ *Amstrad CPC Range* ● *A. R. Walker*

Perhaps the amount of space allotted to this program listing is the best indication of the quality of it.

Fantasmagorical is a platform adventure where your quest is to return one of the holy halos to the totem pole of Torag. That sounds like fairly typical adventure stuff but the platform element of the game really lifts this particular program above its contemporaries.

You play the part of Fanto Freddie, whose task it is to find the various halos littered about the realms of the castle fantasmagorical. His movements are controlled by either the cursor or a joystick and due to the high risks involved he has three lives. Despite the length of the program it is well worth the effort of typing-in all the data, but once you begin to play beware of the spiders.

```
10 REM Fantasmigorical
20 REM
30 REM ANDREW WALKER
40 :
50 KEY 159,"paper 0:pen 1:ink 0,0:ink 1,20:
mode 2:list"+CHR$(13)
60 KEY DEF 66,1,159
70 RANDOMIZE TIME
80 MEMORY &8FFF
90 DEFINT a-z:DEFREAL t
100 ENT 1,5,3,1,4,-3,1,5,3,1,5,-6,2
110 ENV 1,4,-3,2,2,-2,1
120 ENV 2,3,-2,1,2,-1,1,1,10,1
130 ENV 3,3,1,1,4,-1,2,3,1,2,5,-1,1
140 MODE 0:GOSUB 4110:GOSUB 410 ' Load
150 name$="Andrew":hs$="01000"
160 WHILE 1
170 MODE 0:sx=5:sy=0:gg=0
180 GOSUB 1020 ' Set Screen
190 RESTORE 11410:READ st$,st2$:st$=st$+nam
e$+":"+hs$+st2$:PEN 8:gg=1
200 WHILE INKEY$<>"":WEND:LOCATE 3,23:PRINT
"Fantasmagorical!":l=0:PEN 2
210 n=0:WHILE INKEY$="":n=(n MOD 15)+1
220 INK 8,n:SOUND 2,15*n,1
230 l=l+1:IF l=LEN(st$) THEN l=1
240 PEN n:LOCATE 20,25:PRINT MID$(st$,l,1);
:FOR z=1 TO 4:|SCROLL:CALL &BD19:NEXT
250 WEND:WHILE INKEY$<>"":WEND
260 GOSUB 700 ' Process Data
270 GOSUB 1020 ' Set Screen
280 t=FRE("")
290 WHILE playing
300 GOSUB 1180 ' Move You
310 GOSUB 2190 ' Move Monsters
320 WEND
330 IF win=1 THEN GOSUB 3700
340 GOSUB 3980
350 WEND
360 :
370 END
380 :
390 :
400 :
410 REM Load Data
420 :
430 RESTORE 9000:READ a$,s$:t=0:FOR l=0 TO
15:a=VAL("&"+MID$(a$,(l*2)+1,2))
440 INK l,a:t=t+a:NEXT:BORDER 0
450 IF VAL("&"+s$)<>t THEN MODE 2:PEN 1:INK
 1,20:INK 0,0:PRINT "ERROR in Colour Data:"
;9000:END
460 DIM sc$(5,4),mo(4,4,3),v$(5,4)
470 RESTORE 11100:FOR sx=0 TO 4:FOR sy=0 TO
 4:READ sc$(sx,sy),v$(sx,sy)
480 sc$(sx,sy)=UPPER$(sc$(sx,sy))
490 NEXT sy,sx:READ sc$(5,0),v$(5,0),sc$(5,
1),v$(5,1)
500 sc$(5,0)=UPPER$(sc$(5,0)):sc$(5,1)=UPPE
R$(sc$(5,1))
510 FOR sx=0 TO 5:FOR sy=0 TO 4
520 IF sc$(sx,sy)="" THEN GOTO 540
530 t=0:FOR l=1 TO 91:t=t+ASC(MID$(sc$(sx,s
y),l,1)):NEXT:IF t<>VAL("&"+v$(sx,sy)) THEN
 MODE 2:PEN 1:INK 1,20:INK 0,0:PRINT "Error
 in Screen Data Line:";(sx*5+sy+1)*10+11090
:END
540 NEXT sy,sx
550 RESTORE 9020:l=&A000:at=0:FOR z=1 TO 6:
READ a$,s$:t=0:FOR m=1 TO LEN(a$) STEP 2:a=
VAL("&"+MID$(a$,m,2)):POKE l,a:l=l+1:t=t+a:
NEXT:at=at+t:IF t<>VAL("&"+s$) THEN MODE 2:
PEN 1:INK 1,20:PRINT"Error in M/C Data Line
:";z*10+9010:END
560 NEXT
570 READ s$:IF at<>VAL("&"+s$) THEN MODE 2:
PEN 1:INK 1,20:PRINT"Error in checksums in
lines 9020 to 9080":END
580 RESTORE 9100:l=&9000:ln=9100:FOR z=1 TO
 25:at=0:FOR m=1 TO 6:t=0:READ a$,s$:FOR n=
1 TO LEN(a$) STEP 2:a=VAL("&"+MID$(a$,n,2))
:POKE l,a:l=l+1:t=t+a:NEXT:IF t<>VAL("&"+s$
) THEN MODE 2:PEN 1:INK 1,20:PRINT"Error in
 Sprite Data Line:";ln:END
590 at=at+t:ln=ln+10
600 NEXT m
610 READ s$:IF at<>VAL("&"+s$) THEN MODE 2:
PEN 1:INK 1,20:PRINT"Error in checksums , g
roup"(z-1)*80+9100"to"(z-1)*80+9170"of spri
tes !":END
620 ln=ln+20
630 NEXT z
640 CALL &A000
650 :
660 RETURN
670 :
680 :
690 :
700 REM Process Data
710 :
720 RESTORE 11100:FOR sx=0 TO 4:FOR sy=0 TO
 4:READ sc$(sx,sy),a$
730 sc$(sx,sy)=UPPER$(sc$(sx,sy)):NEXT sy,s
x
740 RESTORE 11380:sx=0:sy=0:FOR n=1 TO 2
750 READ a$,s$:t=0
760 FOR l=1 TO LEN(a$) STEP 4
770 k$=MID$(a$,l,4)
780 FOR m=1 TO 4
790 g=VAL("&"+MID$(k$,m,1)):t=t+g:IF g=15 T
HEN g=-1
800 mo(sx,sy,m-1)=g
810 NEXT m
820 IF mo(sx,sy,0)<>-1 THEN mo(sx,sy,0)=mo(
sx,sy,0)*6
830 IF mo(sx,sy,1)<>-1 THEN mo(sx,sy,1)=mo(
sx,sy,1)*24
840 IF mo(sx,sy,2)<>-1 THEN mo(sx,sy,2)=mo(
sx,sy,2)*6
850 IF mo(sx,sy,3)<>-1 THEN mo(sx,sy,3)=mo(
sx,sy,3)*24
860 sy=sy+1:IF sy=5 THEN sy=0:sx=sx+1
870 NEXT l
880 IF VAL("&"+s$)<>t THEN MODE 2:PEN 1:INK
 1,20:PRINT"Error in Monster data , Lines 1
1380 to 11390":END
890 NEXT n
900 RESTORE 11440:READ sx,sy,x,y
910 playing=1:score=0:energy=99:lives=4:poc
ket=-1:yloc=&9000:score$="00000":win=0
920 DEF FNoffscr=(yinc=1 AND yl>=6*24) OR (
yinc=-1 AND yl<=0) OR (xinc=-1 AND xl<=0) O
R (xinc=1 AND xl>=12*6)
930 xl=x*6:yl=y*24:os=yloc
940 MODE 0:LOCATE 1,23:PEN 4:PRINT"ENERGY":
LOCATE 2,24:PEN 2:PRINT energy;CHR$(8)"%"
950 LOCATE 13,23:PEN 4:PRINT"SCORE":LOCATE
13,24:PEN 2:PRINT score$
960 FOR c=26 TO 26+7*(lives-1) STEP 7:|SPRI
TE,&9000,6,24,175,c:NEXT:GOSUB 2330
970 :
980 RETURN
990 :
1000 :
1010 :
1020 REM Set Screen
1030 :
1040 ORIGIN 0,0,0,639,400-7*48,400:CLG
1050 FOR l=0 TO 90:a=ASC(MID$(sc$(sx,sy),l+
1,1))-65
1060 IF a<0 THEN GOTO 1090
1070 loc=&9000+a*24*6
1080 |SPRITE,loc,6,24,24*(l \ 13),6*(l MOD
13)
1090 NEXT
1100 IF gg=1 THEN |SPRITE,yloc,6,24,yl,xl
1110 IF gg=1 THEN IF mo(sx,sy,0)<>-1 THEN |
SPRITE,&9000+17*144,6,24,mo(sx,sy,1),mo(sx,
sy,0)
1120 IF gg=1 THEN IF mo(sx,sy,2)<>-1 THEN |
SPRITE,&9000+16*144,6,24,mo(sx,sy,3),mo(sx,
sy,2)
1130 :
1140 RETURN
1150 :
1160 :
1170 :
1180 REM Move You
1190 :
1200 xinc=0:yinc=0:jx=2:jy=8
1210 a=JOY(0)
1220 IF a=16 OR INKEY(18)=0 THEN a=0:yloc=&
9000:GOSUB 2730
1230 IF UPPER$(INKEY$)="A" THEN playing=0
1240 IF INKEY(47)=0 THEN WHILE INKEY$<>"":W
END:WHILE INKEY$="":WEND
1250 IF a>7 OR INKEY(1)=0 THEN a=a-8:xinc=1
:yloc=&9000+288
1260 IF a>3 OR INKEY(8)=0 THEN a=a-4:xinc=-
1:yloc=&9000+144
```

```
1270 IF a>1 OR INKEY(2)=Ø THEN a=a-2:yinc=1
:IF xinc=Ø THEN yloc=&9ØØØ
1280 IF a>Ø OR INKEY(Ø)=Ø THEN a=a-1:yinc=-
1:IF xinc=Ø THEN yloc=&9ØØØ
1290 :
1300 IF FNoffscr THEN GOSUB 2050:RETURN
1310 :


1320 IF xinc=-1 THEN GOSUB 1430
1330 IF xinc=1 THEN GOSUB 1550
1340 IF yinc=-1 THEN GOSUB 1670
1350 IF yinc=1 THEN GOSUB 1790
1360 :
1370 IF xinc<>Ø OR yinc<>Ø THEN GOSUB 1920
1380 :
1390 RETURN
1400 :
1410 :
1420 :
1430 REM Go left
1440 :
1450 a1=ASC(MID$(sc$(sx,sy),((x1-jx)\6)+1+(
y1\24)*13,1))-65
1460 a2=ASC(MID$(sc$(sx,sy),((x1-jx)\6)+1+(
(y1+23)\24)*13))-65
1470 IF a1=19 OR a1=24 OR a2=19 OR a2=24 TH
EN xinc=Ø:GOSUB 2480:RETURN
1480 IF a1>2 AND a1<7 THEN xinc=Ø
1490 IF a2>2 AND a2<7 THEN xinc=Ø
1500 :
1510 RETURN
1520 :
1530 :
1540 :
1550 REM Go right
1560 :
1570 a1=ASC(MID$(sc$(sx,sy),((x1+jx+5)\6)+1
+(y1\24)*13))-65
1580 a2=ASC(MID$(sc$(sx,sy),((x1+jx+5)\6)+1
+((y1+23)\24)*13))-65
1590 IF a1=19 OR a1=24 OR a2=19 OR a2=24 TH
EN xinc=Ø:GOSUB 2480:RETURN
1600 IF a1>2 AND a1<7 THEN xinc=Ø
1610 IF a2>2 AND a2<7 THEN xinc=Ø
1620 :
1630 RETURN
1640 :
1650 :
1660 :
1670 REM Go up
1680 :
1690 a1=ASC(MID$(sc$(sx,sy),(x1\6)+1+((y1-j
y)\24)*13))-65
1700 a2=ASC(MID$(sc$(sx,sy),((x1+5)\6)+1+((
y1-jy)\24)*13))-65
1710 IF a1=19 OR a1=24 OR a2=19 OR a2=24 TH
EN yinc=Ø:GOSUB 2480:RETURN
1720 IF a1>2 AND a1<6 THEN yinc=Ø
1730 IF a2>2 AND a2<6 THEN yinc=Ø
1740 :
1750 RETURN
1760 :
1770 :
1780 :
1790 REM Go down
1800 :
1810 a1=ASC(MID$(sc$(sx,sy),(x1\6)+1+((y1+j
y+23)\24)*13))-65
1820 a2=ASC(MID$(sc$(sx,sy),((x1+5)\6)+1+((
y1+jy+23)\24)*13))-65
1830 IF a1=19 OR a1=24 OR a2=19 OR a2=24 TH
EN yinc=Ø:GOSUB 2480:RETURN


1840 IF a1>2 AND a1<7 THEN yinc=Ø
1850 IF a2>2 AND a2<7 THEN yinc=Ø
1860 IF a1=6 AND a2=6 AND pocket=7 THEN poc
ket=-1:MID$(sc$(sx,sy),(x1\6)+1+((y1\24)+1)
*13,1)="@":|SPRITE,&9ØØØ+6*144,6,24,y1+24,x
1:|SPRITE,&9ØØØ+7*144,6,24,175,71:score=sco
re+50:SOUND 1,Ø,-2,10,2,Ø,30:GOSUB 3440
1870 :
1880 RETURN
1890 :
1900 :
1910 :
1920 REM Print man
1930 :
1940 |SPRITE,os,6,24,y1,x1
1950 x1=x1+xinc*jx:y1=y1+yinc*jy
1960 |SPRITE,yloc,6,24,y1,x1
1970 os=yloc
1980 SOUND 1,Ø,10,5,Ø,Ø,30
1990 :
2000 :
2010 RETURN
2020 :
2030 :
2040 :
2050 REM Change screen
2060 :
2070 os=yloc
2080 IF y1=Ø THEN sy=sy-1:y1=6*24:GOTO 2130
2090 IF y1=6*24 THEN sy=sy+1:y1=Ø:GOTO 2130
2100 IF x1=Ø THEN sx=sx-1:x1=12*6:GOTO 2130
2110 IF x1=12*6 THEN sx=sx+1:x1=Ø:GOTO 2130
2120 :
2130 yinx=Ø:xinc=Ø:GOSUB 1010
2140 :
2150 RETURN
2160 :
2150 RETURN
2160 :
2170 :
2180 :
2190 REM Move monsters
2200 :
2210 mx1=mo(sx,sy,Ø):my1=mo(sx,sy,1)
2220 mx2=mo(sx,sy,2):my2=mo(sx,sy,3)
2230 IF mx1<>-1 THEN |SPRITE,&9ØØØ+17*144,6
,24,my1,mx1:mx1=mx1+2*SGN(x1-mx1):mo(sx,sy,
Ø)=mx1:|SPRITE,&9ØØØ+17*144,6,24,my1,mx1
2240 IF mx2<>-1 THEN |SPRITE,&9ØØØ+16*144,6
,24,my2,mx2:mx2=mx2+SGN(x1-mx2):my2=my2+SGN
(y1-my2)*2:mo(sx,sy,2)=mx2:mo(sx,sy,3)=my2:
|SPRITE,&9ØØØ+16*144,6,24,my2,mx2
2250 IF (x1+3)\6=(mx1+3)\6 AND (y1+12)\24=(
my1+12)\24 THEN energy=energy-3:SOUND 1,100
,2,15,1,1,1:LOCATE 2,24:PEN 2:PRINT energy;
CHR$(8);"% "
2260 IF (x1+3)\6=(mx2+3)\6 AND (y1+12)\24=(
my2+12)\24 THEN energy=energy-1:SOUND 1,255
,2,15,1,1,1:LOCATE 2,24:PEN 2:PRINT energy;
CHR$(8);"% "
2270 IF energy<1 THEN LOCATE 2,24:PEN 2:PRI
NT " Ø% ":energy=99:GOSUB 2480
2280 :
2290 RETURN
2300 :
2310 :


2320 :
2330 REM Lives
2340 :
2350 FOR c=26 TO 26+7*(lives-1) STEP 7
2360 |SPRITE,&9ØØØ,6,24,175,c
2370 NEXT
2380 lives =lives-1:IF lives<1 THEN playing
=Ø:GOTO 2440
2390 FOR c=26 TO 26+7*(lives-1) STEP 7
2400 |SPRITE,&9ØØØ,6,24,175,c
2410 NEXT
2420 PEN 2:energy=99:LOCATE 1,24:PRINT "  9
9% "
2430 :
2440 RETURN
2450 :
2460 :
2470 :
2480 REM Lost life
2490 :
2500 gap=90
2510 IF mo(sx,sy,Ø)<>-1 THEN |SPRITE,&9ØØØ+
17*144,6,24,mo(sx,sy,1),mo(sx,sy,Ø)
2520 IF mo(sx,sy,2)<>-1 THEN |SPRITE,&9ØØØ+
16*144,6,24,mo(sx,sy,3),mo(sx,sy,2)
2530 |SPRITE,os,6,24,y1,x1
2540 |SPRITE,&9ØØØ+10*144,6,24,y1,x1
2550 t=TIME+gap:WHILE TIME<t:WEND
2560 |SPRITE,&9ØØØ+10*144,6,24,y1,x1
2570 |SPRITE,&9ØØØ+11*144,6,24,y1,x1
2580 t=TIME+gap:WHILE TIME<t:WEND
2590 |SPRITE,&9ØØØ+11*144,6,24,y1,x1
2600 |SPRITE,&9ØØØ+12*144,6,24,y1,x1
2610 t=TIME+gap:WHILE TIME<t:WEND
2620 |SPRITE,&9ØØØ+12*144,6,24,y1,x1
2630 |SPRITE,os,6,24,y1,x1
2640 SOUND 1,Ø,20,7,1,1,30
2650 IF mo(sx,sy,Ø)<>-1 THEN |SPRITE,&9ØØØ+
17*144,6,24,mo(sx,sy,1),mo(sx,sy,Ø)
2660 IF mo(sx,sy,2)<>-1 THEN |SPRITE,&9ØØØ+
16*144,6,24,mo(sx,sy,3),mo(sx,sy,2)
2670 GOSUB 2330
2680 :
2690 RETURN
2700 :
2710 :
2720 :
2730 REM Pickup/Drop
2740 :
2750 IF ASC(MID$(sc$(sx,sy),((x1\6)-(x1 MOD
 6>3))+1+13*((y1\24)-(y1 MOD 24>12))))-65>1
9 AND ASC(MID$(sc$(sx,sy),((x1\6)-(x1 MOD 6
>3))+1+13*((y1\24)-(y1 MOD 24>12))))-65<24
THEN GOSUB 3530:RETURN
2760 IF pocket=18 AND ASC(MID$(sc$(sx,sy),(
(x1\6)-(x1 MOD 6>3))+1+13*((y1\24)-(y1 MOD
24>12))))-65=15 THEN playing=Ø:score=score+
1000:win=1:RETURN
2770 IF ASC(MID$(sc$(sx,sy),((x1\6)-(x1 MOD
 6>3))+1+13*((y1\24)-(y1 MOD 24>12))))-65=1
3 THEN SOUND 1,100,50,12,3,Ø:energy=99:LOCA
TE 2,24:PEN 2:PRINT energy;CHR$(8);"% ";:RE
TURN
2780 IF pocket=14 OR pocket=18 THEN GOSUB 2

970:IF f1=Ø THEN RETURN
2790 ch=ASC(MID$(sc$(sx,sy),((x1\6)-(x1 MOD
 6>3))+1+13*((y1\24)-(y1 MOD 24>12))))-65
2800 IF ch=6 OR ch=8 OR ch=9 OR ch=13 OR ch
=15 OR (ch>18 AND ch<25) THEN RETURN
2810 swp=pocket
2820 IF pocket<>-1 THEN |SPRITE,&9ØØØ+pocke
t*144,6,24,175,71
2830 IF pocket<>-1 THEN |SPRITE,&9ØØØ+pocke
t*144,6,24,((y1\24)-(y1 MOD 24>12))*24,((x1
\6)-(x1 MOD 6>3))*6
2840 pocket=ch
2850 IF pocket<Ø THEN pocket=-1
2860 IF pocket<>-1 THEN |SPRITE,&9ØØØ+pocke
t*144,6,24,175,71
2870 IF pocket<>-1 THEN |SPRITE,&9ØØØ+pocke
t*144,6,24,((y1\24)-(y1 MOD 24>12))*24,((x1
\6)-(x1 MOD 6>3))*6
2880 IF swp<>-1 THEN MID$(sc$(sx,sy),((x1\6
)-(x1 MOD 6>3))+1+13*((y1\24)-(y1 MOD 24>12
)))=CHR$(65+swp)
2890 IF swp=-1 THEN MID$(sc$(sx,sy),((x1\6)
```

```
-(x1 MOD 6>3))+1+13*((y1\24)-(y1 MOD 24>12)
),1)="0"
2900 swp=0
2910 SOUND 1,100,30,7,0,1
2920 :
2930 RETURN
2940 :
2950 :
2960 :
2970 REM Shoot ?
2980 :
2990 f1=0
3000 IF pocket=18 AND (mo(sx,sy,2)<>-1 OR m
o(sx,sy,3)<>-1) THEN SOUND 1,0,20,7,1,0,30:
GOTO 3120
3010 IF pocket=14 AND (mo(sx,sy,0)<>-1 OR m
o(sx,sy,1)<>-1) THEN SOUND 1,0,20,7,1,0,30:
GOTO 3030
3020 f1=1:RETURN
3030 |SPRITE,&9000+14*144,6,24,175,71:pocke
t=-1
3040 mx1=mo(sx,sy,0):my1=mo(sx,sy,1):sy1=y1
:sx1=x1
3050 |SPRITE,&9000+14*144,6,24,sy1,sx1
3060 WHILE sx1<>mx1 OR sy1<>my1
3070 |SPRITE,&9000+144*14,6,24,sy1,sx1
3080 sx1=sx1+SGN(mx1-sx1):sy1=sy1+SGN(my1-s
y1)
3090 |SPRITE,&9000+144*14,6,24,sy1,sx1:FOR
gap=1 TO 30:NEXT
3100 WEND:|SPRITE,&9000+14*144,6,24,sy1,sx1
:score=score+200:GOSUB 3440:mo(sx,sy,0)=-1:
mo(sx,sy,1)=-1:mf=17:GOSUB 3300:RETURN
3110 :
3120 |SPRITE,&9000+18*144,6,24,175,71:pocke
t=-1
3130 mx1=mo(sx,sy,2):my1=mo(sx,sy,3):sy1=y1
:sx1=x1
3140 |SPRITE,&9000+18*144,6,24,sy1,sx1
3150 WHILE sx1<>mx1 OR sy1<>my1
3160 |SPRITE,&9000+144*18,6,24,sy1,sx1
3170 sx1=sx1+SGN(mx1-sx1):sy1=sy1+SGN(my1-s
y1)
3180 |SPRITE,&9000+144*18,6,24,sy1,sx1:FOR
gap=1 TO 30:NEXT
3190 WEND:|SPRITE,&9000+18*144,6,24,sy1,sx1
:score=score+100:GOSUB 3440:mo(sx,sy,2)=-1:
mo(sx,sy,3)=-1:mf=16:GOSUB 3300
3200 x2=RND*3:x3=RND*12:y2=RND*3:y3=RND*6
3210 WHILE x2=sx OR y2=sy OR  MID$(sc$(x2,y
2),x3+1+y3*13,1)<>"0"
3220 x2=RND*3:x3=RND*12:y2=RND*3:y3=RND*6
3230 WEND
3240 MID$(sc$(x2,y2),x3+1+y3*13,1)=CHR$(18+
65)
3250 :
3260 RETURN
3270 :
3280 :
3290 :
3300 REM Sink into floor
3310 :
3320 |SPRITE,&9000+mf*144,6,24,my1,mx1
3330 FOR l=0 TO 22
3340 |SPRITE,&9000+mf*144,6,23-l,my1+l,mx1
3350 CALL &BD19:CALL &BD19
3360 SOUND 1,10*l*(mf-15),1
3370 |SPRITE,&9000+mf*144,6,23-l,my1+l,mx1
3380 NEXT
3390 :
3400 RETURN
3410 :
3420 :
3430 :
3440 REM Score
3450 :
3460 LOCATE 13,24:PEN 2:MID$(score$,7-LEN(S
TR$(score)))=MID$(STR$(score),2)
3470 PRINT score$;
3480 :
3490 RETURN
3500 :
3510 :
3520 :
3530 REM Tardis
3540 :
3560 m=32*(x1>40)-32*(x1<40):xinc=-SGN(m)
3570 |SPRITE,os,6,24,y1,x1
3580 FOR l=0 TO 23
3581 |SPRITE,os,6,24-l,y1+l,x1:|SPRITE,os+6
*(23-l),6,l+1,y1,x1+m
3602 FOR d=1 TO 40:NEXT
3603 SOUND 1,200-l*5,3,10:SOUND 3,200+l*5,3
,10
3604 |SPRITE,os,6,24-l,y1+l,x1:|SPRITE,os+6
*(23-l),6,l+1,y1,x1+m
3610 NEXT:x1=x1+m
3620 |SPRITE,os,6,24,y1,x1
3630 energy=energy-35:IF energy<1 THEN p=99
+energy:GOSUB 2480:energy=p
3640 LOCATE 2,24:PEN 2:PRINT energy;CHR$(8)
;"% "
3650 :
3660 RETURN
3670 :
3680 :
3690 :
3700 REM win
3710 :
3720 sx=5:sy=1:GOSUB 3440:gg=0:GOSUB 1020
3730 gg=1
3740 PEN 4:LOCATE 3,7:PRINT "Congratulation
s!":p=energy
3750 WHILE lives>0:FOR l=p TO 0 STEP -1:ene
rgy=l
3760 SOUND 1,255,2,15,1,1,1:LOCATE 2,24:PEN
 2:PRINT energy;CHR$(8);"% "
3770 score=score+10:GOSUB 3440:NEXT:GOSUB 2
330:energy=99:WEND
3780 t=TIME:WHILE t+300>TIME:WEND:BORDER 9
3790 MODE 0:p=4
3800 FOR l=0 TO 640 STEP 8
3810 MOVE l,0:DRAW l,p-2,9:PLOT l,p,2:MOVE
l+4,0:DRAW l+4,p-2,9:PLOT l+4,p,2
3820 p=p+SGN((RND*6)-3):p=p-(p<1):p=p+(p>8)
3830 NEXT
3840 |SPRITE,&9000+288,6,24,191-24,2
3850 PEN 3:LOCATE 4,5:PRINT"Press Any Key."
3860 PEN 6:LOCATE 4,7:PRINT"You Are Free !"
3870 WHILE INKEY$<>"":WEND:l=632
3880 WHILE INKEY$=""
3890 |SCROLL
3900 MOVE l,0:DRAW l,p-2,9:PLOT l,p,2:MOVE
l+4,0:DRAW l+4,p-2,9:PLOT l+4,p,2
3910 p=p+SGN((RND*6)-3):p=p-(p<1):p=p+(p>8)
3920 WEND:BORDER 0
3930 :
3940 RETURN
3950 :
3960 :
3970 :
3980 REM high score
3990 :
4000 IF score<=VAL(hs$) THEN GOTO 4070
4010 hs$=score$:FOR l=1 TO 40:PRINT:NEXT
4020 PEN 2:PRINT "You have the Highest scor
e":PRINT
4030 PEN 7:PRINT "Enter your name"
4040 PEN 4:INPUT ">",name$:IF name$="" OR L
EN(name$)>10 THEN GOTO 4040
4050 IF LEFT$(UPPER$(NAME$),6)="ANDREW" THE
N name$="Mr. Skill!"
4060 :
4070 RETURN
4080 :
4090 :
4100 :
4110 REM Instructions
4120 :
4130 FOR l=1 TO 15:INK l,l:NEXT
4140 a$="FANTASMAGORICAL!":p=1:FOR l=1 TO L
EN(a$):LOCATE l+2,2:PEN p
4150 p=p+1:IF p=8 THEN p=p+1
4160 IF p=16 THEN p=1
4170 PRINT MID$(a$,l,1);:NEXT
4180 LOCATE 1,1:PRINT STRING$(20,"="):PRINT
 STRING$(20,"=")
4190 PEN 15:PRINT:PRINT SPC(8)"KEYS":PEN 1:
PRINT SPC(7)"******"
4200 PEN 2:PRINT:PRINT SPC(2)"USE:Cursor Ke
ys"
4210 PEN 3:PRINT:PRINT SPC(9)"OR"
4220 PEN 4:PRINT:PRINT SPC(1)"Joystick  to
move"
4230 PEN 5:PRINT:PRINT SPC(6)"A  N  D"
4240 PEN 6:PRINT:PRINT"ENTER or FIRE BUTTON
";
4250 PEN 7:PRINT:PRINT SPC(1)"To Pickup / D
rop /"
4260 PEN 10:PRINT:PRINT SPC(3)"Use An Objec
t"
4270 PEN 11:PRINT:PRINT:PRINT SPC(4)"PLEASE
 WAIT"
4280 :
4290 RETURN
4300 :
4310 :
4320 :
9000 DATA 000119030b11141a000907080d040215,
a7
9010 :
9020 DATA 010aa0211fa0c3d1bcc912a0c323a0c36
ca05350524954c55343524f4ccc,d51
9030 DATA 001fa00aa02100c0dd460078fe0028042
33d20fcdd460278fe00280d0100,95c
9040 DATA 000930040150c0093d20f3dd4e04dd460
6dd5609dd5e00c5e51aae772313,aa5
9050 DATA 10f9e1010000809300401 50c009c10d20e
8c92100c716011e01cd19bd237e,9cb
9060 DATA 2b7723147afe5020f53e007701b107093
0040150c00916011c7bfe0920e0,930
9070 DATA c9,c9
9080 DATA 3516
9090 :
9100 DATA 00003c3c000000146894280000 3cc0c03
c000068e8d49400,660
9110 DATA 0068c0c09400003cc0c03c00001468942
80000103c3c2000,654
9120 DATA 00b0303070000 50b0303070a0503030303
0a050b0303070a0,810
9130 DATA 15f0e0d0f02a007ae0d0b50000353a3f3
a0000353 03a3500,86a
9140 DATA 003a3530350000303530350000303a303
a00003530303a00,341
9150 DATA 003a303530001030609030203030c0c03
030102040801020,5af
9160 DATA 261e
9170 :
9180 DATA 0000143c000000003c3c280000143c3c3
c000014943c3c00,2d8
9190 DATA 0040c03c3c000040c03c3c000040943c3
c0000143c3c2800,4f0
9200 DATA 00003c3c00000000302000000001030300
000030f03a0000,292
9210 DATA d0f0f03a0000d0f0b5302a003f3f3a302
a000010303 02a00,765
9220 DATA 001030352a0000303035 3f0000303035 3
f00103030353f00,32b
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```
9230 DATA 103030356a2a30303035c0c01030206ac
000020000c000,668
9240 DATA 1b52
9250 :
9260 DATA 00003c28000000143c3c000003c3c3c2
800003c3c682800,2d4
9270 DATA 003c3cc0000003c3cc0800003c3c688
00000143c3c2800,584
9280 DATA 00003c3c0000000103000000030302
00000035f03000,28d
9290 DATA 000035f0f0e00015307af0e0001530353
f3f001530302000,711
9300 DATA 00153a302000003f3a303000003f3a303
000003f3a303020,34a
9310 DATA 15953a303020c0c03a30303040c095103
02000c00001000,673
9320 DATA 1bb3
9330 :
9340 DATA 0c000c0c0c00330433333304330433333
3043304333333304,2bc
9350 DATA 330433333304330433333304330433333
304000000000004,280
9360 DATA 040c000c0c001933043322001933043332
2001933043322008,237
9370 DATA 193304332200193304332200193304332
200193304000000,257
9380 DATA 1933000c0c00193304333304193304333
304193304333304,29a
9390 DATA 193304333304193304333304193304333
304000004000004,23e
9400 DATA ea2
9410 :
9420 DATA 0c000c0c000c330433330433333043333
0433330433330433,2bc
9430 DATA 330433330433330433330433330433330
433000000000000,27c
9440 DATA 040c0c0c0c0c19333333332219333333
3221933333333322,355
9450 DATA 193333333322193333333322193333333
3220000000000,31d
9460 DATA 040c000c0c0c193304333322193304333
3221933043333322,2c4
9470 DATA 193304333322193304333322193304333
3220000400000000,294
9480 DATA 1102
9490 :
9500 DATA 040c000c0c04193304332219193304332
2191933043322219,26e
9510 DATA 193304332219193304332219193304332
2190000000000000,242
9520 DATA 000c0c0c040c04333322192204333322l
9220433333221922,289
9530 DATA 043333221922043333221922043333221
922000000001922,290
9540 DATA 040c040c19221922192219221922192 21
922192219221922,26e
9550 DATA 192219221922192219221922192219221
92200000000000,22b
9560 DATA e62
9570 :
9580 DATA 1030303030200000c0c040000000000040
4000000000040400,144
9590 DATA 0000400000000040400000000000c0c0
000000000c0c0000,60
9600 DATA 00000c0c00000000004000000cccc0408c
ccc33668c4c9933,59d
9610 DATA 33330844333333668449933cccc0000c
ccc002000001000,729
9620 DATA 0020000010000020000010001000000000
020100000000020,c0
9630 DATA 1000000000202000000000102000000000
01020000000010,c0
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```
9640 DATA fea
9650 :
9660 DATA 000033cc00000033336600001133333330
00022003333333,363
9670 DATA 0000993333220000993333220000cc333
3000000cc333300,4a6
9680 DATA 0044cc33220000448833220000448833 0
000004488330000,484
9690 DATA 00cc00220000000cc00220000000cc00000
00000cc00000000,374
9700 DATA 44880000000000448800000000448800000
0000448800000000,330
9710 DATA cc0000000000000cc00000000000cc0000000
000cc000000000000,330
9720 DATA 1661
9730 :
9740 DATA fcfcfcfcfca8fca854545400fcfca8a8a
800fc54545400000,e1c
9750 DATA fc00a8a80000fca8a8a80000fc5454000
000a8fc54000000,8dc
9760 DATA a8a8a8000000fca8a8000000a8fc00000
000fc5400000000,738
9770 DATA a8fc00000000fc5400000000a8a800000
000fca800000000,5e8
9780 DATA a8a8000000000a8a8000000000fc0000000
000fc000000000,498
9790 DATA fc00000000000a8000000000000a8000000
000a8000000000000,2f4
9800 DATA 2ba4
9810 :
9820 DATA 54fcfcfcfcfc00a8a8a854fc00545454f
cfc0000a8a8a8fc,e70
9830 DATA 0000545400fc0000545454fc000000a8a
8fc000000a8fc54,7e0
9840 DATA 000000545454000000005454fc00000000f
c5400000000a8fc,594
9850 DATA 000000000fc5400000000a8fc0000000005
4540000000054fc,4ec
9860 DATA 000000005454000000005454000000000
0fc000000000fc,348
9870 DATA 0000000000fc0000000000540000000000
0540000000000054,1f8
9880 DATA 2610
9890 :
9900 DATA 0000000000400000000000000000000000
0000000000000000,c0
9910 DATA 000000000000000000000000000000000f0
00000005050f0f00,37
9920 DATA 000f0a0f0f000000f0f050a000000f0f0f0
000000f0f0a0f00,c8
9930 DATA 0005050f0f000000f0f0f000000050f050
f0000050f0a0a00,a5
9940 DATA 00000f0000000000000000000000000000
000000000000000,f
9950 DATA 0000000000000000000000000000000000
00000000000040,c0
9960 DATA 333
9970 :
9980 DATA 0000050a0040000000f0f0000000000050f0
a0000000050f0a00,129
9990 DATA 000f000f0f000000f000f0f000000f0a0f0
f000050f0a0f0a00,c8
10000 DATA 050f0a0f000a050f0f00050a050f0f00
0f0a0f0f0a000f0f,eb
```

```
10010 DATA 0f0f0a050f0f050f00050f0a000a0505
0f0a00000f0a0f0a,dc
10020 DATA 00050f0a0f0a000f0f0a0f00000f0f0a
0500000f0f0f0500,cd
10030 DATA 00050f0f000000050f0f0a0000000f0f
000000000050a0040,13d
10040 DATA 5c2
10050 :
10060 DATA 0000050a00400000050a00000f00050a
000f0f0a050a050f,147
10070 DATA 050a050a050a050a050a050a000f050a
0f00000f050a0f00,b4
10080 DATA 000f00000f00000000000000000000000
00000f0f00000f0f,5a
10090 DATA 0f0f00000f0f00000000000000000000000
000000000000f00,4b
10100 DATA 000f050a0f00000f050a0f00050f050a
0f0a050a050a050a,c3
10110 DATA 0f0a050a050f0f00050a000f0000050a
0000000000050a0040,147
10120 DATA 4aa
10130 :
10140 DATA 0000c3c30000004100000820000041c3c3
820000000ffff0000,690
10150 DATA 0000d7ff000000000ebff000000000d7ff
000000000ffff0000,794
10160 DATA 0000ebff00000055d7ffaa000055d7ff
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10370 :
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cccccc6cccccc88,10f7
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```

This program to be continued next month. FEBRUARY ISSUE



Big trouble in

Activision may not be enjoying the success to which it has been accustomed but Electric Dreams, its U.K. sister, promises to take the lions' share of the market in 1987. Francis Jago visited Southampton to see what is afoot.

In a year there are many changes in the software industry. One year ago Activision, one of the top three software houses in the world, decided to establish a small off-shoot in the U.K. to produce software suitable for the European market. Seeking a man to control the company, the obvious choice seemed to be Rod Cousens, ex-supremo of Quicksilva.

Now Cousens is handling the complete U.K. and European network for Activision as well and Electric Dreams has become one of the top eight U.K. software houses. Another major change is that software produced by Electric Dreams is being exported to Activision's home country where, by all accounts, it is doing well.

Another change is the introduction of Software Studios. Set up last April and run by John Dean and Dave Cummins, it is the development centre for all Electric Dreams and Activision products destined for countries other than the U.S. By introducing this concept, the consensus of opinion is that the whole process of software development will be simplified considerably. Instead of many individual projects, many of which will overlap in terms of ideas and resources, all projects are routed directly through Software Studios.

To ensure success in the next few months, Electric Dreams has two film tie-ins which should, provided they are as good as the previews I saw, dominate the market. The first is based on a film which for me was the most enthralling of 1986. Directed by James Cameron, and starring the delectable Sigourney Weaver, *Aliens* was a follow-up to the all-time classic *Alien*.

The film was intended to be much more than just a sequel, however, and the game reflects that, with plenty of new and innovational features. Although the film was released in September, Electric Dreams believes that the impact will have lasted long enough to ensure that the game benefits from the cult following of the film.

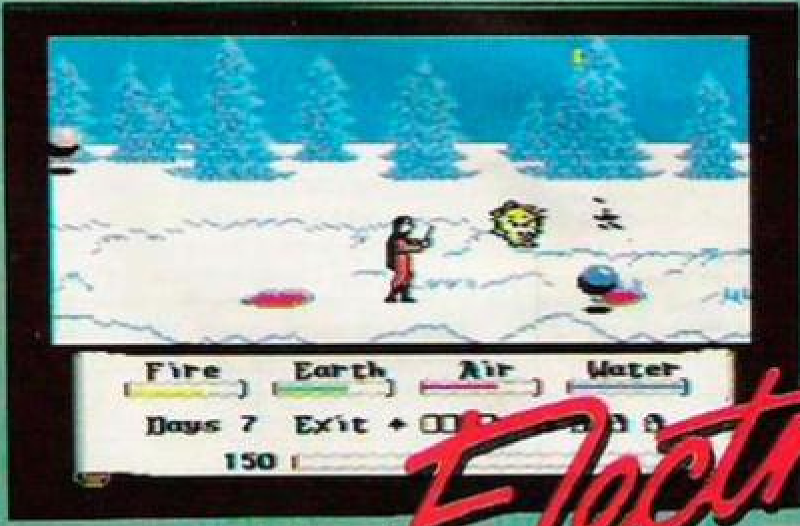
One mistake the programmers will not be making is to make the game unplayable by anyone who did not see the film and one member of the development team avoided seeing the film deliberately to test how playable the game really is.



In the game, you control Ripley, the star of both films, and five other marines – Hicks, Burke, Gorman, Bishop and Vasquez – simultaneously. The game starts with you and your comrades in the Mobile Tactical Operations Bay (MTOB) in the armoured personnel carrier. This is considered safe ground and the aliens cannot get you there. On the split screen you can see the faces of the characters at the bottom, with the top of the screen being used to display the view from the portable video camera strapped to the head of whichever crew member you are controlling at the time.

In the action screen, there are also joystick-controlled sights which are the smart guns of the crews. The object is to retain control of the base by fighting back the Alien warriors and shooting away the bio-mechanical growth which appear in rooms where the Aliens have been.

If you do not shoot away the growth, the room will fill gradually with Face Huggers and Eggs. For those who have not seen the film, Face Huggers are alien beings which lay





Electric Dreams
SOFTWARE

Little Hampshire

eggs inside human carriers and should be avoided at all costs, a fact for which John Hurt will vouch.

As you travel round the maze two approaches can be taken. First, you can send away each marine, one at a time, and hope that they can clear some



of the way through the maze. One tip I was given was that teamwork seems to work a great deal better.

To travel round the maze you can control one player and move him from room to room, or you can give each marine instructions, such as go five rooms west. The latter is not as precarious as it sounds, as each marine carries a proximity meter indicating when an alien is nearby and the computer immediately puts you in control of that marine.

When you are controlling a marine who is confronting an alien warrior, it is necessary to be quick and accurate. To kill the warriors you must either shoot them one in the head, or three times in the body, but an injured alien is definitely worth avoiding. Another point to note is that dead warriors leave behind a pool of deadly acid, so if you shoot an alien by a door, that door is impassable. If one of your marines is captured by the aliens it is possible to rescue him, so long as you are fast; otherwise he will be impregnated and you will be forced to kill him.

Throughout the maze there are rooms which must be kept open, such as the armoury, general, and control rooms; without them the game will be unplayable, as the general and control rooms activate the lighting. If by chance you manage to get through the maze you will be confronted by one – for there is more than one in



this version – of the Queen Aliens and that means real trouble.

Electric Dreams is rightly proud of Aliens. It is a game which will take someone months to complete and even then I am informed by the designer that, as with the film, there is more than one twist in its tail. The graphics and sound are excellent and its ability to involve the player seems to assure its success.

Aliens may be the most-talked-about of Electric Dreams releases but it certainly is not the only high-quality game it has up its proverbial sleeve. The other licensing deal is with a film which is, at this moment, cleaning-up at the box offices. *Big Trouble In Little China,* for that is its name, is another multi-character game which allows you to take the role of three men, all of whom have completely different fighting styles.

Staying, as with Aliens, closely to the film without making the game unplayable for people who have not seen it, the programming team has made the game fun as well as complicated, and the ability to choose which fighting method you want to use should widen the appeal.

As if to prove that a game can be great without any form of licensing deal, Electric Dreams is set to release *Chameleon* and *Explorer*. Chameleon is certainly popular in the Electric Dreams office and Cummins has managed to amass a score upwards of 300,000 – no mean feat. Using as a storyline a man who can align himself to different elements, the game is colourful and intriguing.

Explorer is a combination of an arcade adventure and a complicated simulation. With approaching 40 billion locations, although I have no intention of counting them, Explorer is programmed by the Ram Jam Corporation, so it should be good.

If what I have seen is a criterion, Electric Dreams has software which should stun everyone for 1987. Aliens, Big Trouble, Chameleon and Explorer are only the start – just wait to see the twist in the tale.

• ***Your Computer*** **would like to thank Electric Dreams and in particular Mark Eyles for help in the preparation of this article.**



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The film *Aliens* has dominated the box office both in London and the rest of the U.K., and seems set to become just as much of a classic as its Ridley Scott-created predecessor. Electric Dreams has produced an excellent game to link with the film which exploits some of the best aspects of the film to create an eerie and exciting arcade/adventure.

The first 10 winners will receive a copy of the game together with an Aliens sweatshirt and poster. The 15 runners-up will receive a copy of the game and a poster. To enter, answer the three simple questions below and send your answers, together with your chest size, to *Your Computer*, 79-80 Petty France, London SW1H 9ED. The winners will be the first correct entries drawn by the closing date of the competition, February 28, 1987.



QUESTIONS

1. *Which game did Paul Shirley write for Electric Dreams?*
2. *Electric Dreams is owned by another large software house. Which is it?*
3. *On what film tie-in, apart from Aliens, is Electric Dreams close to completion?*

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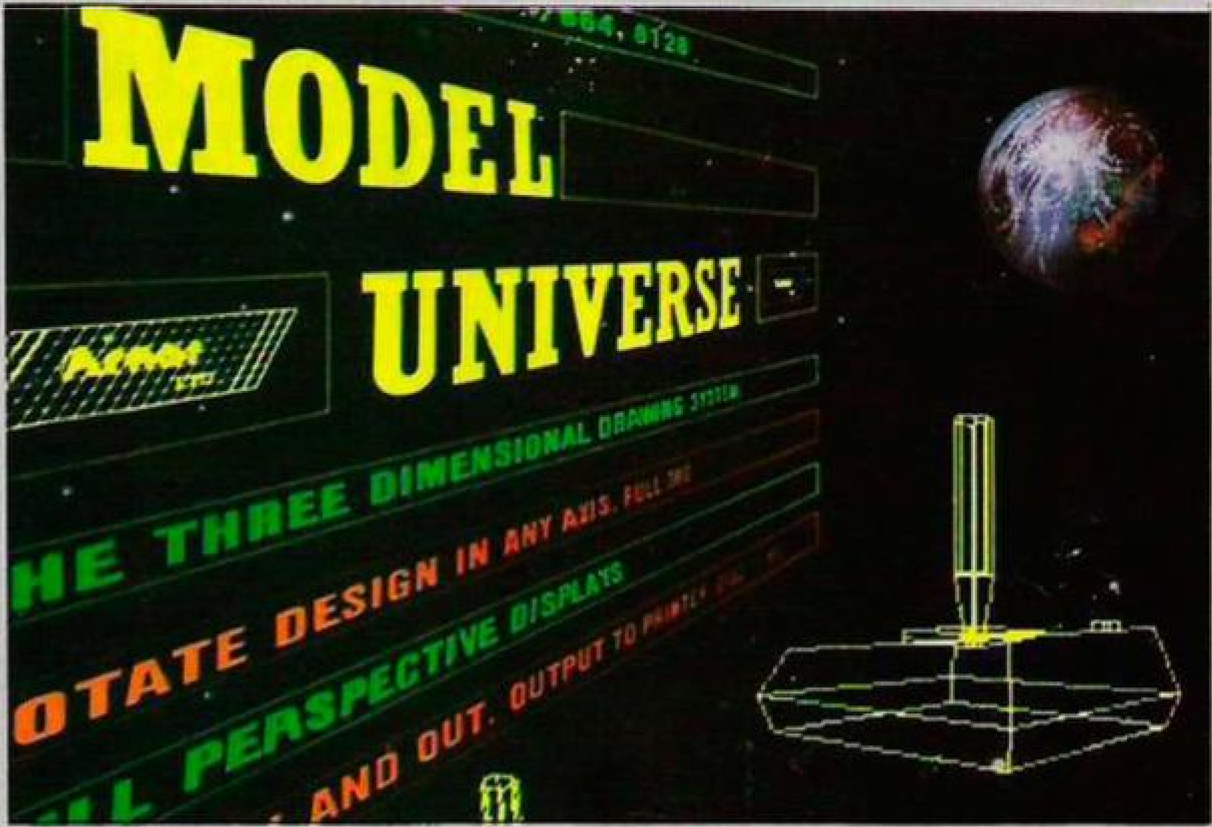
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Arnor has just published a three-dimensional, real-time, interactive graphics package. It certainly sounds like a good idea. Stephen Applebaum tells us whether it fulfils its promise.

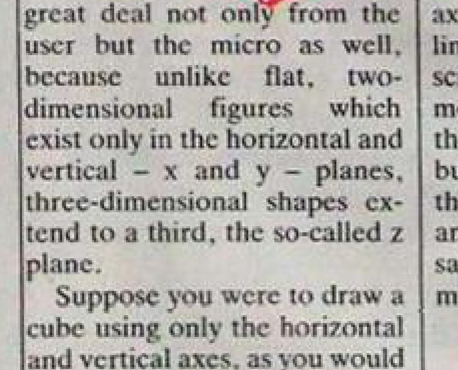
A Model Universe is formed

Through the years, the power of the microchip has increased considerably, having now reached a stage where machines small enough to fit on top of a desk can perform tasks which would once have required the efforts of something the size of a wardrobe – or bigger.

Real-time, three-dimensional, interactive graphics, for example, could, until recently, be constructed only on machines costing tens of thousands of pounds. Today, micros as basic as the Amstrad CPC 464 can execute incredibly complex operations which not so long ago were the preserve of the mainframe computer.

With all that power at your finger-tips, programming real-time 3D graphics is almost impossible without a sound understanding of the way the computer works – or at least it was before Arnor published *Model Universe: A 3D Design System*, for the complete range of Amstrad CPC machines.

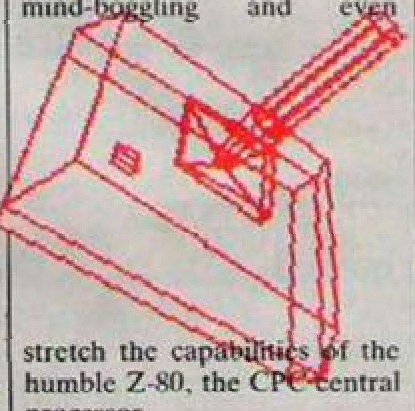
Real-time graphics, and especially 3D ones, demand a



great deal not only from the user but the micro as well, because unlike flat, two-dimensional figures which exist only in the horizontal and vertical – x and y – planes, three-dimensional shapes extend to a third, the so-called z plane.

Suppose you were to draw a cube using only the horizontal and vertical axes, as you would on a piece of paper. Moving it round the screen would pose little problem for the computer because, as far as it is concerned, the object is flat and can therefore be rotated only left or right or moved to another position on the screen; the mathematics behind any of those actions is relatively simple.

When you draw the same cube in 3D, so utilising the z axis, which is interpreted as a line going into and out of the screen, the computer has much more work to do. Not only can the cube be rotated as before but it can also roll in and out of the screen, and through any angle. The calculations necessary to perform such a feat are mind-boggling and even



stretch the capabilities of the humble Z-80, the CPC central processor.

Model Universe provides a graphics environment in which three-dimensional graphics can be drawn, rotated and even zoomed into, with scarcely any effort from the user. To make that possible, Arnor has rewritten many of the Amstrad operating system commands and, in particular, those dealing with screen-handling, so that the computer can manipulate graphics several times faster than normal.

Model Universe is on either a disc or a cassette, each of which arrives complete with a demonstration program and an arcade game called *Gatecrasher*. The former uses a collection of pre-drawn figures to demonstrate the capabilities of the program. As for the latter, it is too dire to warrant more than a passing acknowledgment of its presence.

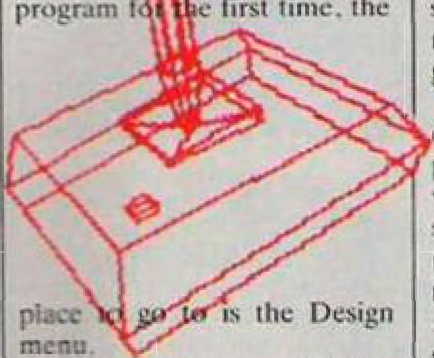
Compared to the plethora of art packages on the market, Model Universe is extremely primitive in appearance. It has



no pull-down menus as such, or even icons. Instead of clicking on a small picture to select something, the program modes are accessed by moving a highlighted strip over options crammed into a few small boxes.

The first menu you encounter on loading Model Universe is the Main menu. It is the doorway to the remainder of the program, as well as being the key to operations presiding over the saving and loading of

picture files. Unless you want to load a pre-defined shape, which of course you will not want to do if you are using the program for the first time, the



place to go to is the Design menu.

Contained there are all the commands necessary to define a shape. Because of the nature of wire frame graphics, figures can be composed only of lines and vertices. As many as 255 lines and 255 vertices can be supported by the program at any time but the speed of the program decreases greatly as the number of lines used increases.

Pictures are drawn by moving an arrow to the position on the screen where you want the line to end and then pressing key 7 on the Amstrad numeric keypad to draw it. The end of a line is taken as the starting-point for the next, unless you want it to begin somewhere else, in which case you must press key 8. Lines can be deleted by pressing key 9.

Objects composed of many lines rotate at much slower speeds than those using only a few. The Model Universe manual points out that fact, although it rather understates just how dramatic the speed difference can be – "As you can image an object using 255 lines will rotate rather more slowly than one using 3". For "rather more slowly", read "so much more slowly, in fact, that you might wonder whether it was really worth drawing such a complicated figure in the first place".

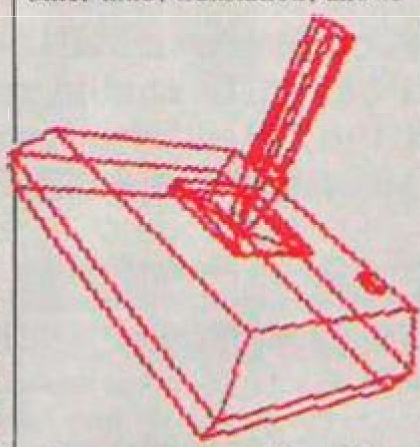
Drawing in three dimensions is a strange experience after working in two, because horizontal and vertical lines can be drawn but perpendicular ones as well. Arnor has overcome any confusion that situation might cause by equipping Design mode with a command window which displays the cursor position constantly in terms of its x, y and z co-ordinates. When the z co-ordinate is positive, it means that the cursor is on a line pointing out of the screen, whereas when it is minus, it means it is on one going into the screen.

Having the extra dimension extends the range of design possibilities enormously. Reverting to the cube, for instance, it can be drawn as normal and then, using a command called Viewpoint, be rotated so that a picture can be drawn on each of its six faces.

Although shapes are described to the program as lines and vertices, that convention does not eliminate completely figures like circles. They, too, can be drawn using a Circle command found in the Design menu. It goes without saying that a circle does not incorporate one straight line but, even so, it must still be described in a way which follows the line/vertice rigeur.

When drawing a circle, you first have to decide whether you want to draw it in the xy, zx or zy plane. If you choose the first the finished circle lies flat on the screen, while the other two draw it parallel to the x and y axes respectively. Next you input the radius, followed by the number of sectors. There can be as few as three sectors and as many as 30. The smaller number produces an equilateral triangle, while the higher one an accurate circle.

Once a shape has been completed, it can be rotated about the x, y and z axes, via commands found in the Display menu. Rotation is one of two types of 3D transformations supported by the package. The other kind, translation, allows



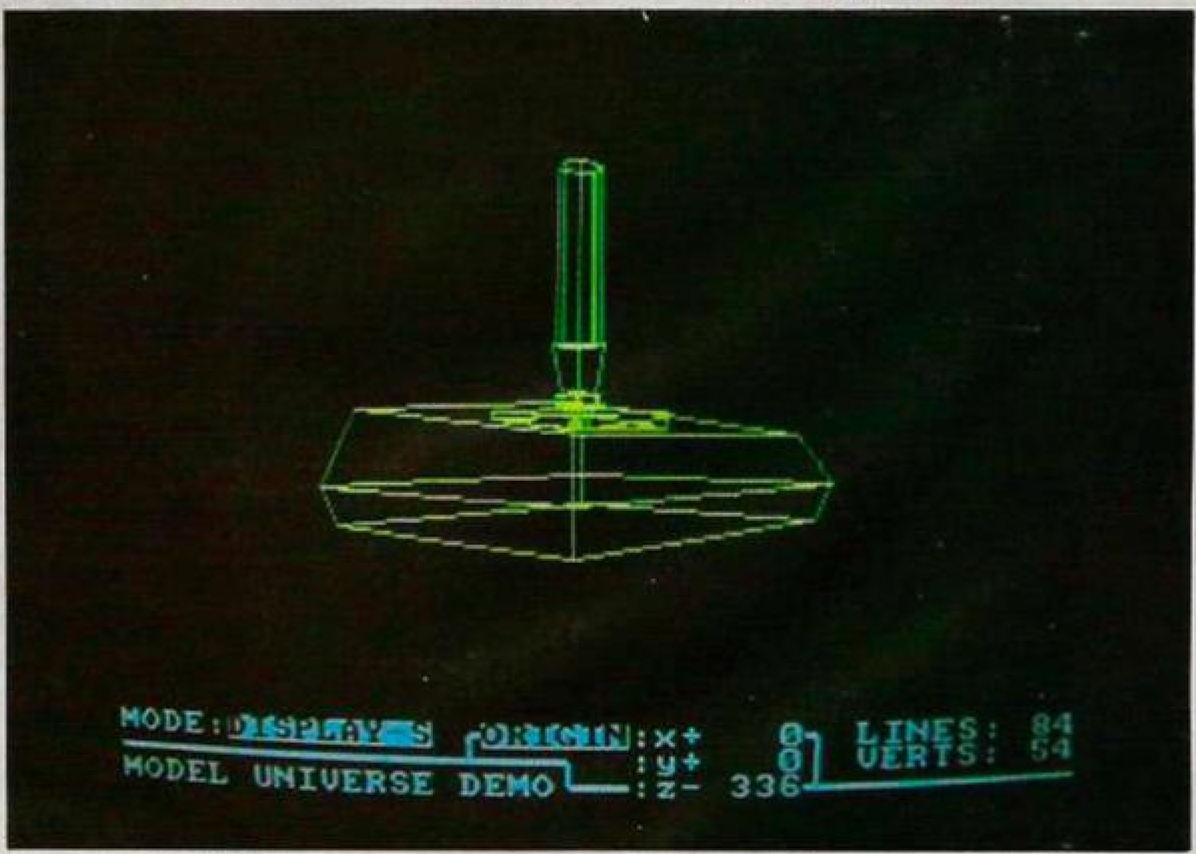
objects to be moved in and out of the screen.

Different effects can be obtained with translation by changing the form the origin takes. There are three types of origin – static, dynamic and viewpoint. They rotate an object about a fixed point with the co-ordinates 10,0,—336; spin it about its own axis; and change the display so that it is as if you are moving round the object respectively.

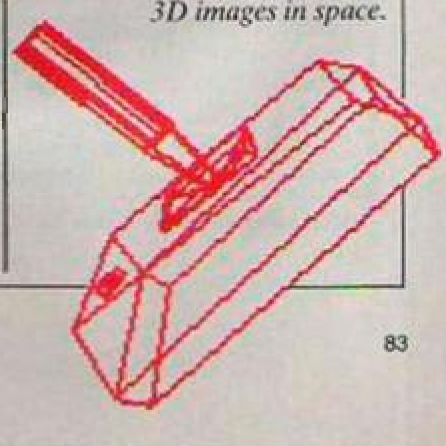
Finally, any Model Universe screen can be output to a variety of external devices, making it possible for you to include your work in future programs. As well as having routines to save screens to tape and disc and print them on an Epson printer, there is also a Basic output facility which allows you to customise the Model Universe program, so that screens can be used in almost any way.

Model Universe is a package which promises much but, in the end, delivers very little. Arnor says that its product is merely an introduction to 3D graphics. If that is the case, it is a very slight introduction which can only leave the user feeling that there must be much more to this fascinating area of programming than is even spoken of here.

Some of the effects which can be produced are impressive but I cannot see people buying the package, except perhaps as a curio.



3D images in space.



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Highlights of our February issue

Contents subject to late revision

LOW-COST PC SOFTWARE
With PC clones now selling for less than £500, this guide will help you find software to suit your needs and at the proper price.

COMMODORE 64 EXPANSION
This ever-popular machine has had some new software and hardware produced recently. *Your Computer* updates you on the latest additions.

PLUS
Behind the scenes with the AA.

INEXPENSIVE PRINTERS
With a bewildering array of high-quality, inexpensive printers available, who knows which to buy? *Your Computer* gives you a helping hand.

MICROS UNDER THE HAMMER
The high street may not be the cheapest place to buy a micro or peripherals. In this feature, we give some hints on where you could pick up a real bargain.

February issue on sale January 22, 1987

NEWS ● REVIEWS ● HINTS & TIPS ● CLUBS ● SOFTWARE GUIDES

ADVERTISERS INDEX



ATARI ST

Power Without The Price!

520ST PACKAGES

The 520ST-M keyboard costs only £346.96 (+VAT: £399) and includes an RF modulator and cable, allowing you to connect it to an ordinary domestic TV set. The keyboard is supplied with 512K RAM, a mouse and a free set of 3½" disks containing applications software. For a limited period from August 11th 1986, we have some special packs offering combinations of the 520ST-M keyboard with a ½ Mbyte SF354 Atari disk drive and an Atari monitor (either the Mono SM124, or Colour CM36512). These packages offer up to £200 extra discount on a system. If purchased from Silica, they also come with our free 'ST STARTER KIT'. All of the pack prices shown in the chart include VAT.

UPGRADE TO 1024K RAM

We are pleased to be able to offer a 1Mbyte upgrade on the standard 520ST keyboard to increase the memory from 512K to a massive 1024K. It has a full 1 year warranty and is available from Silica at an additional retail price of only £86.96 (+VAT=£100). Any of the five packs can be upgraded to 1Mbyte for only £100. The 1Mbyte ST offers a low price alternative to the 1040, but also gives you the benefit of an RF modulator (not normally fitted on the 1040).

£100 DISCOUNT 1 DISK DRIVE	ALL PACK PRICES INCLUDE VAT	**PACK 1** Keyboard £399 Disk Drive £149 *Normal Price* £548 *Discount* £100 **Pack Price £448**
£150 DISCOUNT 2 DISK DRIVES + MONITOR	**PACK 2** (MONO) Keyboard £399 Disk Drive £149 Disk Drive £149 Mono Monitor £149 *Normal Price* £846 *Discount* £150 **Pack Price £696**	**PACK 3** (COLOUR) Keyboard £399 Disk Drive £149 Disk Drive £149 Colour Monitor £299 *Normal Price* £996 *Discount* £150 **Pack Price £846**
£200 DISCOUNT 2 DISK DRIVES + MONITOR + PRINTER	**PACK 4** (MONO) Keyboard £399 Disk Drive £149 Disk Drive £149 Mono Monitor £149 Printer (SMM804) £199 *Normal Price* £1045 *Discount* £200 **Pack Price £845**	**PACK 5** (COLOUR) Keyboard £399 Disk Drive £149 Disk Drive £149 Colour Monitor £299 Printer (SMM804) £199 *Normal Price* £1195 *Discount* £200 **Pack Price £995**

REDUCED PRICES

Atari's ST personal computers are now firmly established both in the USA and Europe. The main attraction of the ST range is the value for money which these computers represent, giving both private and business users a powerful asset at a very modest price. There are now several ST packages available from Silica at a reduced price, further enhancing the Atari 'Value for Money' reputation. In addition, we are giving away a FREE Silica 'ST STARTER KIT' with every 520 or 1040 ST purchased at Silica Shop. These offers will only be available for a limited period and commence on 11/8/86.

POWER FOR BUSINESS

The list below shows some of the new business products which have been recently launched for the Atari ST range. It gives an indication of the ST's potential to business buyers looking to install a powerful, low-cost system:

CP/M EMULATOR
20Mbyte HARD DISK
LOTUS 123™ CLONE
dBASE III CLONE
IBM COMPATIBILITY
VT100 EMULATOR
MICROSOFT WRITE
dBASE II

Any ST computer will provide its user with a very powerful asset, utilising a vast range of applications, particularly in the business world. Many software companies have been quick to recognise it for its business potential, and have produced programs for the ST which harness this potential. In addition, there are several peripheral and hardware products becoming available to add to the ST's 'Power For Business'. Software now available includes dBMan, a dBASE III clone as well as H&D Base, a dBASE II clone. In fact, First Software have now launched Ashton Tate's original dBASE II program for the ST. In addition, PC Intercomm is a VT100 emulator which enables you to use any ST keyboard as a terminal connected to a mainframe or mini. Other programs include a powerful accounts package by Cashlink and a Lotus 1-2-3™ clone called VIP Professional. Microsoft have announced that their powerful word processor 'Microsoft Write' will soon be available for the ST. Many packages are available for very specific market applications including a powerful CAD (Computer Aided Design) program called Easy Draw from Migraph. In addition, there is an engineering tool called PC Board Designer by Abacus Software which will enable the user to design printed circuit boards. For further details of how the ST can help in your business, return the coupon below. We will be pleased to send you our latest newsletter and price list.

PRICE MATCH PROMISE

We hope you will find that the combination of our low prices, FREE delivery service, FREE Starter Kit and after sales support, will be enough to make you buy your Atari equipment from Silica Shop. If however, there is something you wish to purchase, and you find one of our competitors offering it at a lower price, please contact Owen Pascoe (Office Manager), or one of the telesales staff in our sales department. When you telephone us, please provide us with our competitors name, address and telephone number. Providing our competitor has the goods in stock, we promise to match his offer (on a 'same product - same price' basis) and still provide you with our normal free delivery. You will also be entitled to our full after sales service, including free newsletters and technical helpline support. We don't want you to go anywhere else for your Atari products. So shop at Silica, the U.K.'s undisputed No1 Atari specialist.

FREE SOFTWARE

When you buy a 520 or 1040 ST computer keyboard from Silica Shop, you will receive a large and varied software package free of charge. This package consists of twelve programs. Wherever you purchase your Atari ST computer, you should receive the first six software titles as standard. However, if you purchase your ST from Silica, you will also receive a further six extra titles, giving you a total of twelve. All ST's now have TOS/GEM already installed on ROM, so the list of free software you should receive is as follows:

1) GEM - *DR Desktop environment with WIMP (fitted in ROM)*
2) TOS - *Tramiel Operating System (fitted in ROM)*
3) 1st WORD - *Word Processor by GST using GEM*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) NEOCHROME - *A powerful colour paint and graphics package (only useable with colour systems)*

If you purchase your ST from Silica, not only will you receive the standard six pieces of software as listed above, but we will also give you the following six additional programs FREE OF CHARGE:

7) MEGAROIDS - *Asteroids type game by Megamax*
8) DOODLE - *Simple paint/doodle drawing package (works on mono or colour systems)*
9) CP/M EMULATOR - *Allows use of DR's Z80 CP/M software to run on the ST range*
10) CP/M UTILITIES - *Various utilities to use with CP/M*
11) DEMONSTRATION & PUBLIC DOMAIN SOFTWARE - *Various games, demos and accessories*
12) CARDS - *A unique set of card games from Microdeal*

These additional free software titles are all part of the FREE Silica 'ST STARTER KIT', return the coupon below for further details.

FOUR FREE MANUALS

In addition to the free software which will be given to you when you buy your ST from Silica, you will receive four free manuals:

1) **ST OWNERS MANUAL (80 pages)**: *Easy access to the information you require to unpack, set-up and become familiar with the ST*
2) **ST BASIC SOURCE BOOK & TUTORIAL (240 pages)**: *Gives you the information to increase your level of programming expertise*
3) **ATARI LOGO SOURCE BOOK (77 pages)**: *A source book for Logo, showing how to use the language in the GEM environment.*
4) **1st WORD MANUAL (48 pages)**: *Instructions for 1st Word*

ST NEWSLETTER

8 PAGES OF INFORMATION TO HELP YOU TO DECIDE

RETURN THE COUPON FOR A FREE COPY

1040ST-F

For the businessman and the more serious home user, there is the 1040ST-F with 1028K RAM. This can be used in a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The 1040ST-F keyboard with integral 1Mb disk drive costs only £699 (+VAT=£803.85). As the 1040ST-F was manufactured solely with business use in mind, it does not come with an RF modulator for use with a domestic TV. Instead, it requires a monitor. There are three Atari monitors available and the prices for the 1040 with these monitors are as follows:

1040 Keyboard Without Monitor - **£699** (+VAT=£803.85)
1040 Keyboard + High res mono monitor - **£799** (+VAT=£918.85)
1040 Keyboard + Low res colour monitor - **£899** (+VAT=£1033.85)
1040 Keyboard + Med res colour monitor - **£999** (+VAT=£1148.85)

The 1040ST-F includes 1Mbyte of RAM as well as a 1Mbyte double sided disk drive and mains transformer, both built into the keyboard to give a compact and stylish unit, with only one mains lead. The 1040ST-F is supplied with a set of software disks as well as our own FREE Silica 'ST STARTER PACK'. Call into your nearest branch of Silica Shop for a demonstration.

1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
117 Orpington High Street, Orpington, Kent, BR6 0LG
Lion House (1st floor), 227 Tottenham Court Rd, London, W1
Selfridges (1st floor), Oxford Street, London, W1A 1AB

£699

FREE STARTER KIT

WITH EVERY 520 & 1040 ST PURCHASED AT SILICA SHOP

RETURN THE COUPON FOR DETAILS

SILICA SHOP

WE ARE THE UK's No1 ATARI SPECIALISTS

At Silica we have been successfully dedicated to Atari ever since their products first appeared on the UK market. We can attribute our success largely to the Atari specialisation which we practice and to the user back-up we provide. Rest assured that when you buy a piece of Atari hardware at Silica you will be fully supported. Our mailings giving news of software releases and developments will keep you up to date with the Atari market and our technical support team and sales staff are at the end of the telephone line to deal with your problems and supply your every need. With our specialist bias, we aim to keep stocks of all the available Atari hardware, software, peripherals and accessories. We also stock a wide range of Atari dedicated books and through us, the owners on our list can subscribe to several American Atari dedicated magazines. We can provide a full service to all Atari owners and are now firmly established as the UK's NUMBER ONE Atari specialists. Here are just some of the things we can offer to our customers.

★ FREE POST & PACKING ON MAIL ORDERS
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★ REPAIR SERVICE ON ATARI PRODUCTS

If you would like to be registered on our mailing list as an Atari computer owner, or as a person interested in buying an Atari machine, let us know. We will be pleased to keep you up to date with new Atari developments free of charge. So, return the coupon today and begin experiencing a specialist Atari service that is second to none.

SILICA HOTLINE 01-309 1111

SILICA SHOP LTD, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

SEND FOR FREE ATARI ST LITERATURE

To: Silica Shop Ltd, Dept YC 0187, 1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX

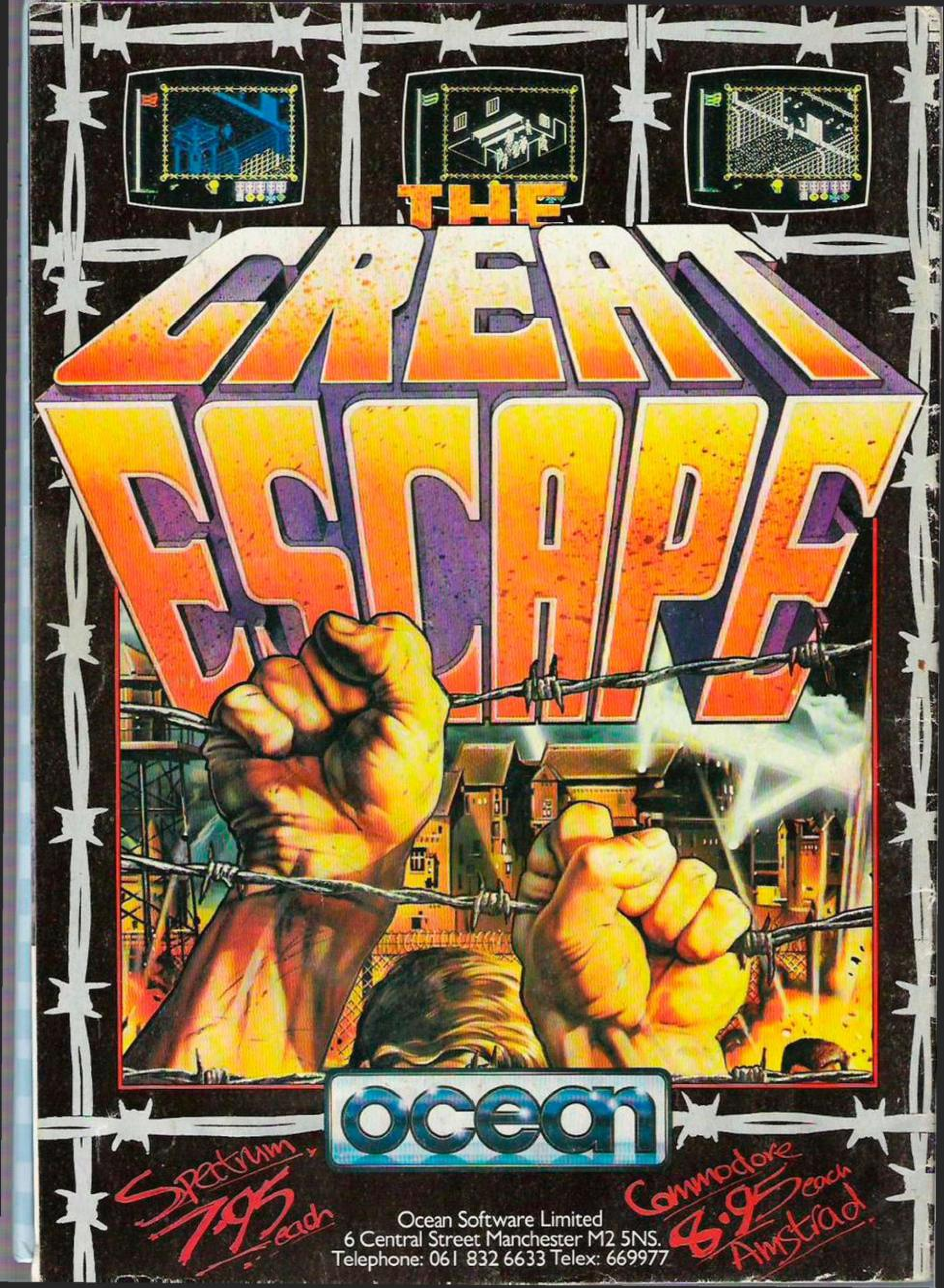
PLEASE SEND ME FREE LITERATURE ON THE NEW RANGE OF ATARI ST COMPUTERS

Mr/Mrs/Ms: .... Initials: .... Surname: ....

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Do you already own a computer
If so, which one do you own? ....



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